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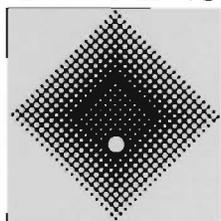


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**VICTORIA  
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**OF  
TECHNOLOGY**

**THE EFFECTIVENESS OF WORKPLACE  
HEALTH PROMOTION WITHIN THE  
VICTORIA POLICE FORCE:  
A PILOT STUDY**

**A Masters Thesis**



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## Abstract

Research conducted within the Victoria Police has previously highlighted problems in the area of employee health and fitness. Officers of law enforcement agencies require a level of health and fitness which will enable them to effectively carry out their daily duties. While much of a police officer's shift is sedentary in nature, intermittent bursts of physical activity require enhanced levels of physical fitness. Despite these physical requirements, after a brief probationary period, police officers are not normally required to undergo any form of medical or fitness assessment for the rest of their careers.

A proposal involving a Master's pilot research project was developed and presented to Force Command, the Police Association, and Senior Management of the Department of Sport and Recreation. All three offered their support and approval for the project. A grant was provided by the Department of Sport and Recreation to assist in the conduct of the project.

The project was entitled "Operation Physicop" for the purpose of the Victoria Police, and was conducted over a twelve month period in a geographical area called "Y" District (now "F" and "G"). The project aimed to measure the effectiveness of workplace health promotion within the Victoria Police Force by measuring changes in several health and fitness parameters as a result of interventions aimed at influencing health behaviour and the workplace environment in a positive way. To measure any subsequent changes in the health and fitness status of police, officers were first invited to attend a coronary Risk Screening Clinic at the Victoria Police Hospital. The same police officers were subsequently invited to attend a Fitness Assessment conducted at various police stations within "Y" District. Three self-administered written surveys were utilised during testing.

In 1989, 362 officers or 79.2% of the district (86.7% male) volunteered to participate in the Risk Screening Clinic. Of these officers, 207 or 45.3% (86.5% male) volunteered for a Fitness Assessment. In 1990, 145 officers (89% male) returned for a second Risk Screening Clinic test, and 110 (83.6% male) for a second Fitness Assessment. Approximately 89 officers were lost through attrition as a result of resignation or transfer, reducing the "target population" substantially. Considering the attrition rate, participation rates in the research project were excellent.

During the programme, newsletters containing health messages and forthcoming activities were regularly advertised. A variety of activities were held, including golf, cricket, tennis, ten-pin bowling, Jump Rope For Heart (a skip-a-thon), Fruit Promotion, Healthy Barbecues and Healthy Breakfasts, Stop Smoking Seminars, and a Stress Management Seminar. Health related literature and posters were regularly distributed within the district.

Statistical treatment of the data showed significant and encouraging improvements in a range of health and fitness parameters. Police officers who re-attended at the Risk Screening Clinic and/or Fitness Assessment significantly improved their diet, were exercising more and smoking less. Participants reduced their weight, lowered their resting blood pressure and increased their abdominal and grip strength. Sick leave and WorkCare in "Y" District decreased significantly when compared to police in the rest of the state. An Evaluation Survey (of participants and non-participants) showed 85.4% reported the project had improved morale at their station, while 67.6% said they thought the project had improved their work performance. As a result of "Operation Physicop", 92.4% reported being more aware of health and fitness issues, 93% took more care of themselves, 87.1% changed their diet for the better, 87% exercised more regularly, 70.7% lost weight, 86.2% improved their perceived well-being and 78.7% improved their self-image. Of the respondents, 90% said "Operation Physicop" was a worthwhile project and thought that it should be extended statewide.

"Operation Physicop" was initially viewed with suspicion within the district, however, after reassurances of confidentiality of results and officers becoming more familiar with its genuine aims, they soon accepted "Operation Physicop" wholeheartedly. The excellent results achieved in such a short space of time are probably indicative of two factors. Firstly, the need for positive change in the health behaviour of officers, and secondly, their desire to change if given the opportunity and assistance. Research has shown that the health and fitness levels of Victoria Police officers are generally poor. This is despite the need for enhanced health and fitness to be able to perform the job effectively. Also, sick leave and WorkCare costs within the Force are high. "Operation Physicop" has demonstrated that it can contain these costs through an integrated programme which has positive effects on morale, work performance, health attitudes, exercise levels and diet. "Operation Physicop" was viewed by the officers as a positive initiative showing that the organisation cared. It has clearly been shown that implementation of a similar project statewide would help not only the Force's most important resource - people, but would also benefit the organisation as a whole.

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**Table of Contents**

	<b>Page</b>
Acknowledgments . . . . .	i
Abstract . . . . .	ii
Table of Contents . . . . .	iii
List of Appendices . . . . .	vi
List of Tables . . . . .	ix
List of Figures . . . . .	x
 <b>CHAPTER 1 - INTRODUCTION</b>	
Chapter 1 - Introduction . . . . .	1
Chapter Summary . . . . .	2
Background to Study . . . . .	3
Problem Statement . . . . .	3
Purpose of Study . . . . .	5
The Need For the Study . . . . .	5
Research Caveats . . . . .	6
Delimitations of the Study . . . . .	7
Objectives of the Study . . . . .	8
Primary Research Hypotheses . . . . .	8
 <b>CHAPTER 2 - REVIEW OF LITERATURE</b>	
Chapter 2 - Review of Literature . . . . .	10

---

Chapter Summary . . . . .	11
Problem Statement . . . . .	12
Rationale . . . . .	12
Background of Workplace Health Promotion . . . . .	13
Health Promotion and the Biomedical Model . . . . .	14
Health Care - A Misnomer . . . . .	15
Victim-Blaming Ideology . . . . .	15
Cardiovascular Disease . . . . .	16
Research Findings in the Community . . . . .	17
Police Health and Fitness . . . . .	21
Legal Implications . . . . .	23
Organisational Culture . . . . .	23
The Effectiveness of Workplace Health Promotion . . . . .	24
Economics of Workplace Health Promotion . . . . .	28
Methodological Considerations . . . . .	30

**CHAPTER 3 - METHODS AND PROCEDURES**

Chapter 3 - Methods and Procedures . . . . .	32
Chapter Summary . . . . .	33
Research Design . . . . .	34
Limitation of the Study . . . . .	34
Subjects . . . . .	35
Development of Survey Instruments . . . . .	35

---

District Notification . . . . .	37
Project Launch . . . . .	37
Brief Description of Tests Conducted . . . . .	38
Detailed Description of Tests Conducted (Risk Screening Clinic) . . . . .	38
Detailed Description of Tests Conducted (Fitness Assessment) . . . . .	40
"Operation Physicop" Newsletter . . . . .	44
WorkCare Considerations . . . . .	44
Activities . . . . .	44
Exercise Promotion . . . . .	46
Seminars . . . . .	50
Risk Screening Clinic and Fitness Assessment Retesting - 1990 . . . . .	52
Comparisons and Statistical Analysis . . . . .	52
 <b>CHAPTER 4 - RESULTS</b>	
Chapter 4 - Results . . . . .	54
Chapter Summary . . . . .	55
Description . . . . .	56
General Comments about Results . . . . .	56
Groups and Sample Sizes . . . . .	56
Analysis of Variance on Comparison Groups . . . . .	57
Primary Research Hypotheses . . . . .	58
Risk Factors . . . . .	58
Results Group 1 (Risk Screening Clinic) . . . . .	58

---

Results Group 1 (Risk Screening Clinic Questionnaire) .....	60
Results Group 2 (Health and Fitness Survey) .....	65
Results Group 2 (Fitness Assessment) .....	73
Programme Activities .....	76
Exercise Promotion .....	77
Health Seminars .....	79
Evaluation Survey .....	79
Sick Leave/WorkCare .....	85

**CHAPTER 5 - SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

Chapter 5 - Summary, Conclusions and Recommendations .....	89
Chapter Summary .....	90
Introduction .....	91
Summary of Findings .....	92
General Discussion .....	101
Strengths, Weaknesses and Limitations of the Study .....	102
Implications for Future Research .....	104
Conclusions .....	105
Recommendations for Future Research .....	107

**APPENDICES .....** 110

Appendix A	Map of "Y" District .....	111
Appendix B	List of Police Stations/Units in "Y" District .....	112
Appendix C {1}	Health and Fitness Survey .....	113

---

Appendix C {2}	Information Sheet for Graded Fitness Test . . . . .	121
Appendix C {3}	Personal History Sheet . . . . .	122
Appendix C {4}	Consent Form . . . . .	123
Appendix C {5}	Fitness Assessment Form . . . . .	124
Appendix C {6}	Evaluation Survey . . . . .	125
Appendix C {7}	Fitness Assessment Information Booklet . . . . .	134
Appendix D	Letters of Endorsement and Introduction . . . . .	145
Appendix E {1}	Letter to officers who had attended Risk Screening Clinic 1989, but not the Fitness Assessment . . . . .	148
Appendix E {2}	Letter to officers who had not participated in Risk Screening Clinic or Fitness Assessment, 1989 . . . . .	150
Appendix F	Media release . . . . .	152
Appendix G {1}	Risk Screening Clinic Questionnaire . . . . .	154
Appendix G {2}	Risk Screening Clinic - Risk Evaluation Report . . . . .	156
Appendix G {3}	Screening Flow Chart . . . . .	157
Appendix H	"Operation Physicop" Newsletter . . . . .	158
Appendix I {1}	Letter to smoking officers regarding Stop Smoking Seminar . . .	161
Appendix I {2}	Letter to Officers in Charge regarding Stop Smoking Seminar . .	163
Appendix J	Result Summary Sheet . . . . .	164
Appendix K {1-36}	Risk Screening Clinic data tables . . . . .	165
Appendix L {1-16}	Health and Fitness Survey data tables . . . . .	186
Appendix M {1-3}	Fitness Assessment data tables . . . . .	199
Appendix N {1-16}	Evaluation Survey data tables . . . . .	202

Appendix O      Glossary ..... 214

**BIBLIOGRAPHY** ..... 219

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**List of Tables**

<b>Table</b>		<b>Page</b>
2.1	Risk Factors for Major Conditions . . . . .	21
4.1	Comparison of Physical Measurements at the Risk Screening Clinic, 1989 to 1990 . . . . .	59
4.2	Comparison of Overall Mean Scores for Risk Screening Clinic Questionnaire, 1989 to 1990 . . . . .	63
4.3	Comparison of Mean Responses to Questions 3 to 9 Health and Fitness Survey, 1989 to 1990 . . . . .	67
4.4	Comparison of Frequency of Consumption of Cereals, Bread and Fruit, 1989 to 1990 . . . . .	68
4.5	Comparison of Mean Responses to Questions 18 to 20 Health and Fitness Survey, 1989 to 1990 . . . . .	69
4.6	Comparison of Mean Responses to Questions 39 to 47 Health and Fitness Survey, 1989 to 1990 . . . . .	72
4.7	Comparison of Fitness Assessment Parameters, 1989 to 1990 . . . . .	74
4.8	Comparison of Trends in Sick Leave and WorkCare Usage Between the Target Population and the Rest of the State, 1985 to 1990 . . . . .	86
4.9	Comparison of Use in Sick Days for High and Low Risk Status Officers, 1988/89 to 1989/90, Group 1 . . . . .	88

## **List of Figures**

<b>Figure</b>		<b>Page</b>
2.1	Causes of Death, Males and Females (All Ages) 1988 .....	16
4.1	Comparison of Overall Diet Score 1989 to 1990 .....	61
4.2	Comparison of Exercise Levels 1989 to 1990 .....	64
4.3	Comparison of Most Money Willing to Contribute to an Activity Run at Work 1989 to 1990 .....	71
4.4	Reasons for Not Participating in Programme .....	80
4.5	Acknowledged Media Sources Re Project Awareness .....	82
4.6	"Do You Think Physicop Has Been a Worthwhile Project?" .....	84

# **Chapter 1**

## **Introduction**

## Chapter Summary

### Introduction

*Research has identified problems in the current health and physical fitness of Victoria Police officers. Major lifestyle concerns include poor nutrition, the need for increased nutritional education and the obvious lack of regular exercise. The importance of improving the health and fitness of police, given the demands of their work, cannot be overstated. In response to this need, a research proposal was developed and presented to Force Command, the Police Association, and Senior Management of the Department and Sport and Recreation. The Department of Sport and Recreation provided funding for an employee health and fitness programme to be trialled over a twelve month period in "Y" District. The purpose of the study was to develop, trial and validate a pilot health promotion programme within the Victoria Police.*

*The specific objectives of the study were to:*

- (1) increase awareness of personal health and fitness issues;*
- (2) facilitate lifestyle changes aimed at enhancing individual health and fitness;*
- (3) increase knowledge and skills related to leading a healthy lifestyle;*
- (4) achieve a degree of cost-containment in relation to sick leave/WorkCare;  
and*
- (5) change the work environment in a positive way which would improve the potential for achieving the preceding objectives.*

*The study included the Risk Screening Clinic, Fitness Assessments, Health and Fitness Survey, analysis of Sick leave/WorkCare incidence and patterns and a final Evaluation Survey. A twelve month health and lifestyle awareness programme provided activities and information aimed at improving officers' health and fitness.*

## Chapter 1 Introduction

### Background to Study

Recent research has identified the general poor health and fitness status of Victoria Police officers. Results of a study conducted by Bodycoat (1987) in conjunction with HBA Health Management highlighted some of the existing problems. The major findings included:

- in the 1985/86 financial year, 141,966 workdays were lost due to sickness/workers compensation (now WorkCare), representing a loss of 657 working years; and
- in a random sample of 40 officers, elevated results were recorded in (i) Percentage body fat (ii) Cholesterol (iii) Triglycerides (iv) Blood pressure and (v) Coronary risk. Below average mean results were recorded in (vi) Abdominal strength (vii) Flexibility and (viii) Maximal oxygen uptake.

An analysis of these results identified major lifestyle concerns, including poor nutrition, the need for increased nutritional education and the obvious lack of regular exercise. Other areas requiring attention were smoking cessation, back-care and stress management.

A research proposal was developed and presented to Force Command for approval. The Police Association were consulted, inviting their approval and involvement in the pilot study. The proposal, entitled "Operation Physicop" was also presented to Senior Management of the Department of Sport and Recreation. The study was in keeping with the Department of Sport and Recreation's broader focus of promoting workplace health and fitness generally, but particularly to public service agencies. It was also intended that the final results would have potential use as a model for assisting other agencies to implement similar workplace health promotion programmes. As a result, a grant was approved to assist in funding a twelve month study.

### Problem Statement

Between 1982/83 and 1987/88, the rate of growth for total health expenditure in Australia increased each year by between 3.5 and 6 per cent (Australian Institute of Health, 1990). In the financial year 1987/88, health expenditure by Australian governments and individuals was \$23.4 billion, or \$1,415 per person. As a proportion of gross domestic product, health expenditure has remained relatively constant, consuming 7.9 per cent in 1987/88 (Australian Institute of Health, 1990). As Jones (1987) suggests, each year a large amount of money is being poured into relatively non-productive illness care.

A similar situation exists in other Western countries. In the United States for example, heart disease is estimated to cost US\$965 per worker per year (World Health Organisation, 1988). Heart disease is the most common cause of death in the Australian work force. It has been estimated by the Australian College of Occupational Medicine (1990) that tens of thousands of working Australians suffer a heart attack or onset of angina every year. One-quarter of heart attack victims die within days, while survivors are often initially incapacitated. Although they may return to a normal life, there is an inevitable high cost to the community (Australian College of Occupational Medicine, 1990).

The report by the Australian College of Occupational Medicine (1990), estimates that a death from a single heart attack incurs a cost to the community of between \$30,000 and \$100,000. This figure is made up of direct payments to dependents, WorkCare payments, sick pay, replacement and retraining, and loss of productivity.

Likewise, the cost of absenteeism through sickness and injury can contribute a significant burden to the operating efficiency of an organisation. For example, the cost of absenteeism in Australia is estimated to cost \$400 per day, per worker (Bloomfield, 1988). The breakdown of the costs includes paid sick leave, supervisor's time rescheduling other employees, and the cost of employing additional people for the job. A report produced for the Automotive Industry Council found that absenteeism and employee turnover added about \$850 to the price of a new car (Baker, 1988). In addition, the number of working days lost due to absenteeism is over ten times the number lost through all industrial disputes (Edwards, 1990).

The cost of health care to the business community therefore cannot be underestimated. In Australia, business itself has only recently become conscious of the need to maintain good health amongst its employees. Poor health and fitness habits, resulting illness, and time off work add significantly to the costs of industry, and lower the effectiveness of individual organisations (Haag, 1987).

People working in different occupations often have different health care costs. For example, very few occupations have the stressful and physical demands inherent to policing. Police may be called upon at any time to perform physically demanding tasks while performing duties of a sedentary nature (Donato and Pounds, 1985). Compared to less stressful occupations, it might be suggested that police have higher health care costs and are generally placed at greater risk.

There is a definite need for comprehensive research in the area of employee health and fitness within the Victoria Police. Bodycoat (1987) concluded that the Victoria Police, in the financial year 1985/86, lost 141,966 days due to ill health/injury equating to an estimated primary cost of \$15,022,400. This figure relates only to the cost in wages and does not take into account overtime, up-grading of personnel, re-training or WorkCare costs. It has been estimated by Kemp (Department of Labour) that the total cost to government and the community from WorkCare in the Victoria Police was \$60 million in 1989/1990 (pers. comm., April 8th). This equates to \$6,000 per employee per year. If a ten

per cent reduction in the rate of ill-health and injury could be achieved, savings of approximately \$6,000,000 per year could be achieved, an amount which would more than pay for an extensive force wide health and fitness programme.

## **Purpose of Study**

The purpose of this study was to develop, trial and validate an employee health and fitness programme within the Victoria Police over a twelve month period. The study was called "Operation Physicop" and was piloted in "Y" District.

## **The Need for the Study**

The importance of improving the health and fitness of police cannot be overstated. Apart from the physical improvement in capability to perform tasks, qualitative improvements in the way in which officers actually perform those tasks can also be expected. Policing is a service vocation involving considerable interaction with the community at all levels. Improving attitudes and values of police towards their own health and fitness could positively change the way in which they relate to members of the community, creating a situation where the provision of the service is positively enhanced.

Operational police officers require a level of health and fitness which will allow them to effectively carry out their daily duties. Officers who are not physically fit will not accomplish tasks as effectively as fitter officers, and in fact may not perform the same tasks at all. Operational policing often involves duties where the consequences of poor physical fitness can be very serious. Stringent physical fitness requirements are therefore part of the initial police selection criteria.

Despite these physical requirements, much of a police officer's shift involves little or no activity. Bodycoat (1985) found that in one eight hour shift, officers on the average were involved in sitting for approximately six hours, standing for approximately one hour, and walking for approximately one hour. The sedentary periods are frequently interrupted by tasks involving bursts of physical exertion which may require enhanced health and fitness. Despite this, after completing a probationary period of approximately 16 months, officers are not required to undergo any further medical or fitness assessment for the rest of their careers. Bodycoat (1987) demonstrated that the health and fitness of officers declined markedly when no formal physical health and fitness assessments were conducted.

This study will provide a valuable pool of data representing the current health and fitness status of participating police, highlighting key issues which need to be addressed. The results will assist future programmes and initiatives in terms of development, implementation, evaluation and cost-benefit analysis.

## Research Caveats

Health promotion in the workplace is a relatively new concept in Australia, and therefore, its benefits are still being determined in the Australian context. While the concept of workplace health promotion has certain intuitive appeal, the complex nature of methodological design has provided some difficulty for researchers. The following research caveats are pertinent to this study, and are presented to demonstrate that the study was undertaken with them in mind.

1. **Methodology.** The field of workplace health promotion is relatively young; consequently, the literature base is sparse (Eddy, Gold and Zimmerli, 1989). Success of other programmes has been variable, often occurring on an ad hoc basis, lacking concrete results (Haag, 1987). There is difficulty in the use of control groups in a valid way in a real world setting. It would appear that evaluation studies need to be implemented, refined and replicated over a period of time to demonstrate the efficacy of workplace health promotion programmes.
2. **Confounding variables.** Researchers encounter difficulties adequately controlling variables that are not part of the intervention process, such as the influence of family, friends and the media. For example, a reduction in cigarette smoking might be attributable to a health programme or an intensive media campaign operating at the same time, or an interactive effect between the two.
3. **Cost-effectiveness.** It has been difficult to demonstrate the cost-effectiveness and self-sustainability of workplace health promotion programmes. By their very nature, there are limitations in the extent to which cost-effectiveness can be demonstrated because of the subjective and qualitative nature of results. For example, how can a 10 per cent increase in aerobic capacity or a 15 per cent reduction in coronary risk be reflected in monetary terms? These issues are difficult to address in the context of people in the workplace.
4. **Self-selection.** A common criticism is that only the healthy participate in workplace health promotion programmes. Because subjects choose to participate, the exclusion of those most in need of intervention is often cited as a major problem in these programmes. Voluntary participation obviously produces the problem of self-selection, which neither produces a representative sample of the population, nor necessarily formally involves those most needing intervention.
5. **Benefits.** There is an underlying assumption that health promotion programmes reduce negative health behaviours and increase positive health behaviours, thereby benefiting the organisation in some way. For example, by making a work force fitter it is likely that morale will increase leading to improvements in worker efficiency. It is acknowledged that there is considerable difficulty in categorically demonstrating such claims.

6. **Individual-orientated.** A criticism of these programmes is that they focus on individual behaviour without addressing environmental issues, such as the influence of social, cultural and political factors, thereby possibly advocating a victim-blaming ideology.<sup>(1)</sup>

7. **Long term effect.** Behaviour change, once initiated, is not always maintained when a programme is removed or decreased in intensity. The degree of reversion to negative behaviours upon the cessation or reduction of a programme, could be determined by researchers making post-programme or longitudinal assessments one, two, or five years later. Post-programme assessment has not normally been adopted, affecting claims made that permanent behaviour change has been achieved.

8. **Mobility.** Policing is a dynamic profession which involves officers frequently transferring between locations. It is likely therefore, that many officers from the target population will transfer out of the district, or resign or retire from the Force throughout the duration of the study. This presents obvious problems in terms of varying exposure levels to the pilot study, and post-programme measurement. However, varying exposure to the programme is a factor in any real life study and is not considered sufficient criticism to prevent such interventions. Even when all subjects experience equal exposure to all aspects of the programme, it is unlikely that each will perceive them equally. Varying exposure is a fundamental problem which cannot be overlooked, but also cannot be overcome.

## Delimitations of the Study

In conducting the study and related to the caveats presented above, the following delimitations are recognised:

1. This study is limited to a specific vocation within the community, which is unique in terms of the tasks police perform, shifts worked, and exposure to work stress. Generalisations to other sectors of the community based on results achieved in this study may therefore be difficult.
2. This study is also limited to a metropolitan police district in the Eastern suburbs of Melbourne. The assumption that personnel working in this district are representative of all police officers working state wide may be erroneous.

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<sup>1</sup> A victim-blaming ideology is where individuals are blamed for their health condition without consideration of the social, economic and cultural circumstances within which the individual lives. While it is certainly true that individuals must bear a substantial proportion of "blame" for their health status in many cases, to consider their health without taking into account factors such as prevailing cultural norms, social acceptability and commercial pressures is a serious flaw.

3. The duration of the study is relatively short. Similar programmes undertaken in other areas often run from two to five years, thus having a greater chance to become part of the system. Because of the existence of a strong police culture, it is acknowledged that if the study were allowed to run longer, it would logically have a greater chance to become integrated and thereby positively influence behaviour change within the target population.

In addition to these preceding delimitations, it was anticipated that an initial *increase* in absenteeism would occur during the first year of the study. This effect has been shown in studies overseas, where it has been argued the increase in absenteeism is largely due to the identification of high risk individuals (with hypertension for example), who then take sick leave in an attempt to rectify the identified risk/problem.<sup>(2)</sup> It is generally accepted however, that after a programme has been established, an expected decrease in sick leave would occur.

## Objectives of the Study

The specific objectives of the study were to:

- (1) increase awareness of personal health and fitness issues;
- (2) facilitate lifestyle changes aimed at enhancing individual health and fitness;
- (3) increase knowledge and skills related to leading a healthy lifestyle;
- (4) achieve a degree of cost-containment in relation to sick leave/WorkCare; and
- (5) change the work environment in a positive way which would improve the potential for achieving the preceding objectives.

## Primary Research Hypotheses

A series of null hypotheses were formulated to be tested at the .05 level of significance. In all cases, it was hypothesised that no significant differences would exist between pre-programme and post-programme measurements on each of the selected variables listed in the following five categories:

- (1) *Risk Screening Clinic* - cardiovascular risk, cholesterol, triglycerides, blood pressure, dietary habits, physical activity, body mass index (BMI), weight, alcohol use and cigarette smoking.
- (2) *Fitness Assessment* - cardiorespiratory function, body composition, strength parameters, spirometry, flexibility and blood pressure.

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<sup>2</sup> How well this approach works is not known. For example, because an individual has been identified as hypertensive does not necessarily mean that time off work will be the best form of treatment.

- (3) *Health and Fitness Survey* - knowledge and attitudes about personal health and fitness and dietary habits.
- (4) *Sick leave/WorkCare* - incidence and pattern of sick leave and WorkCare occurrences.
- (5) *Evaluation Survey* - health and fitness parameters involving awareness of own health and fitness, well-being, self-esteem, dietary habits, exercise habits, cigarette smoking rates and frequency, work performance and morale.

## **Chapter 2**

### Review of Literature

## Chapter Summary

### Literature Review

*Operational police require a level of health and fitness which will allow them to effectively carry out their daily duties. It is assumed that officers who are not physically fit will not generally accomplish tasks as effectively as colleagues who are in better health and physical condition. After graduation, officers are deployed into a work environment which is mostly sedentary, occasionally interrupted by bursts of physical activity. This work environment does not support health-enhancing behaviours. After completing their probationary period, officers are not required to undergo any further form of medical or fitness assessment. The absence of further medical and fitness assessment is known to result in large scale decline in health and fitness levels within the Police Force.*

*The prime responsibility for health and safety in the workplace rests with management, a fact supported by legislation. In addition to humanitarian reasons for improving workers' health and fitness, there are economic advantages in workplace health promotion. There is an acceptance of the fact that the demedicalisation of primary health care through workplace health and fitness promotion is an important step to raise health and fitness levels.*

*Individuals participate in health-endangering behaviours such as excessive alcohol consumption and tobacco use. The modification of these behaviours is a key public health priority in Australia. Coronary heart disease in Australia remains the largest single cause of death. Body weight, exercise levels, cigarette smoking and diet are critical determinants of health and fitness. Workplace health and fitness promotion is seen as the logical choice to achieve improvements in these areas.*

*Substantial and vigorous research is seriously lacking in relation to police health and fitness. High risk, physically demanding occupations such as policing are associated with high medical costs. Studies have shown that workplace health and fitness programmes can improve health and fitness, as well as reduce sick days, medical costs, injuries, accidents and coronary heart disease. The findings in the literature clearly show that workplace health and fitness programmes can significantly improve the health and fitness of employees. Organisations are becoming more aware that a healthier work force experiences benefits such as better morale, more innovation, greater efficiency and productivity, as well as enhanced organisational commitment.*

## Chapter 2 Review of Literature

### Problem Statement

Health care expenditure consumes a large proportion of government funds. Since the beginning of the 1970s, the cost of health care has increased in real terms by 50 per cent (Health Issues, 1988). Health expenditure by Australian Governments is approximately \$23.4 billion, or about 8 per cent of the gross domestic product, which has remained approximately stable for the last 13 years (Australian Institute of Health, 1990).

Many organisations are now realising that there are significant advantages in taking an interest in the health and fitness of their employees. Work related lifestyles which are not conducive to optimal health and fitness, with the resulting illness and time off work can severely reduce the effectiveness of organisations (Haag, 1987).

Law enforcement agencies are recognising the benefits of workplace based health and fitness programmes (Smith and Dunphy, 1987). This new recognition stems from the fact that police appear to be prone to leading poor lifestyles due to a combination of factors such as shift work, high stress levels, poor dietary habits and decreased physical activity.

### Rationale

Recent research suggests that the workplace is a promising avenue through which the modification of cardiovascular risk may be pursued (Owen, Lewis, and Haag, 1989). Since the early 1970s, the popularity of workplace health promotion programmes in Australia has grown. This is due, in part, to increasing concern for cardiovascular disease and the boom in the physical fitness industry. In more recent times, workplace health initiatives have matured into holistic health promotion and self-care concepts, based on individuals being encouraged to assume greater responsibility for their own health and physical fitness (Edington, 1987).

The number of people employed full-time in Australia in 1989 was 7.7 million (Health at Work, 1990). Work related activities consume approximately one-third of a person's waking hours, and are usually only second to sleep in total hours (Pelletier, 1984). Because of its importance in our lives, the workplace also offers unique opportunities to use inbuilt organisational and social resources for the purpose of promoting employee health (Owen, et al., 1989; Australian College of Occupational Medicine, 1990).

Other considerations and advantages of workplace health promotion programmes are the lower cost of medical services, the stability factor of the working population as a "captive" audience, the general willingness of employees to participate in a company sponsored programme and the existence of supportive management and organisational structures (Pelletier, 1984).

It has been argued that the prime responsibility for health and safety in the workplace rests with management. This argument is supported by legislation, in particular Section 21(1) of the Victorian Occupational Health and Safety Act, 1985. This section highlights the duty of employers to *"provide and maintain as far as practical... a working environment that is safe and without risk to health..."* The concept of health is more far-reaching than that of mere "safety", and extends to health related problems such as heart disease, hypertension and alcohol or drug dependence whereby the work environment could be seen to be either contributory or potentially contributory to the condition. It also includes the monitoring of employee's health status. This means employers must play a central role in the success of any workplace health promotion programme (World Health Organisation, 1988). The World Health Organisation (1988) report further states that to ensure programme success, management must allow the necessary resources and time to be dedicated to a workplace health and safety programme. In addition to the humanitarian value of improving workers' health, the economic value is particularly important to employers (World Health Organisation, 1988).

Interestingly, preventive health behaviour is usually associated with a person's increased socioeconomic status (Bauman, 1989; Hetzel and McMichael, 1989). Workplace health promotion therefore also has the potential to flatten the stratification of inequity found in health status by offering programmes to all employees regardless of their socioeconomic background.

## **Background of Workplace Health Promotion**

Workplace health promotion programmes are a relatively new concept and have progressed significantly since the mid-seventies. Programmes have developed from having a narrow emphasis on physical exercise to broader comprehensive and integrated programmes incorporating other lifestyle behaviours (Pfeiffer, 1984). They have progressed beyond the point of being a fad and are being woven into the fabric of the workplace (Ardell, 1982). In the United States, the National Survey of Worksite Health Promotion Activities conducted in 1989, found that 87.6 per cent of all worksites with 750 or more employees had at least one health promotion activity. Of all worksites surveyed (1,358 with 50 or more employees), more than half (51.6 per cent) of the health promotion activities had been implemented in the preceding five years (Fielding and Piserchia, 1989).

In the past, health has been viewed as merely the absence of disease. If no outward symptoms were present, one was assumed to be "well". The advent of modern medicine has brought with it modern pharmacological and surgical techniques, causing many to neglect the importance of individual action and its role in the maintenance of health (Kronenfield, Jackson, Davis and Blair, 1988). This has resulted in a system orientated towards the treatment of illness, where individuals are assured that medical intervention will come to the rescue, even when a careless lifestyle causes the illness (Haag, 1987). These so called "lifestyle diseases" form the major causes of death and disability in

society. Coronary heart disease for example, remains the largest single cause of death in Australia today.

## Health Promotion and the Biomedical Model

In order to understand health promotion, it is necessary to examine briefly its history in the context of the biomedical model. For the past 300 years, Western Culture has been dominated by the view of the human body as a machine, to be analysed in terms of its parts. The notion of an organic, living, and spiritual universe was replaced by that of the world as a machine, and the world-machine became the dominant metaphor of the modern era (Capra, 1989).

From the early nineteenth century, a change in the conceptualisation of disease has occurred. The biomedical model resulted in disease being viewed as having a specific aetiology which could be identified and treated (Morgan, 1985). The approach of promoting health through identifying and curing specific diseases resulted in health and illness being seen as individualistic. The emphasis was placed upon promoting health through medical intervention.

The biomedical model, although forming the cornerstone of modern medicine, is now becoming subject to increasing criticisms. It is now thought that the biomedical model has been far too limited in its approach (Howat, Howat, Fisher and Earle, 1986). The importance of medical intervention in contributing to a decline in mortality in the past may have been over emphasised. Brady (1983) claims that the contribution of medical treatment was negligible until the twentieth century, and continues to be small today. McKeown (1979) demographically studied the decline of mortality in England and Wales between 1838 and 1960. McKeown suggests that most of the decline in death from infectious disease appears to have occurred before the advent of effective immunisation, antibiotics and chemotherapy, with the possible exception of diphtheria and smallpox. By the time the causes of diseases such as cholera, typhoid and dysentery were understood and treatment had been developed, they had already lost much of their virulence (Illich, 1988).

McKeown (1979) and Brady (1983) also state that improvements in nutrition from the mid-nineteenth century, as well as improvements in environmental measures such as sanitation, hygiene, water supply, drainage, ventilation and sewage disposal, has had a marked affect on mortality decline. McKeown further states that curative medicine therefore can only be expected to make a *small* contribution to the prevention of sickness and death, because the two main causes of death in modern, industrial countries result from a small number of congenital conditions and a large number of potentially preventable conditions for which there is no effective cure, such as heart disease and cancer.

## Health Care a Misnomer

The term health care is actually a misnomer. The health care system exists primarily to diagnose, treat, rehabilitate and care for those already afflicted by sickness or injury (Hetzel and McMichael, 1989), rather than promote the attainment and maintenance of health in general. It would be far more appropriate to label this industry "sickness care".

The fee-for-service basis of payment for medical care places a premium on diagnosis and treatment, with the incentives for education and counselling of patients and their families minimised (Hetzel and McMichael, 1989). Health education and promotion on the other hand has its conceptual basis in prevention. Illich (1988) suggests that better health care depends on the willingness and competence of individuals to engage in self-care, rather than on some new therapeutic standard. Self-care, health education and self-responsibility are uniquely interrelated (Illich, 1988).

Illich (1988) states "...that society which can reduce professional intervention to the minimum will provide the best conditions for health..." (p.274). Autonomy is therefore fundamental to health, and as man renounces this autonomy and becomes increasingly dependent on medical care, health will decline. A report by the World Health Organisation (Djukanovic and Mach, 1975) recognises this fact by advocating the deprofessionalisation of primary care as being the most important single step in raising health levels. The authors single out conventional health services as factors in the failure of the present systems to meet the basic health needs in developing countries.

## Victim-Blaming Ideology

Many health professionals argue that the main objective of preventive strategies is to encourage individuals to take personal responsibility for their own health. While this may be true, proponents of individually orientated behaviour change strategies have been accused of supporting a "victim-blaming" ideology (McLeroy, Bibeau, Steckler and Glanz, 1988).

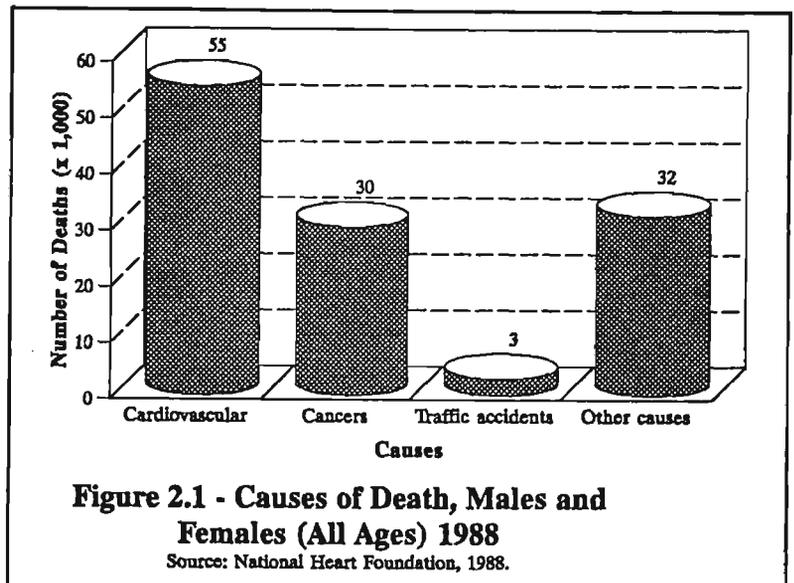
It should be kept in mind that no assumption is made that individuals can and should assume *total responsibility* for their own health (Hetzel and McMichael, 1989). As critics of the victim-blaming approach rightfully point out, an individual's ability to assume such responsibility will vary depending on which group they belong to. Ultimately, only social, political and economic change will produce health equity amongst relatively powerless individuals (Hetzel and McMichael, 1989). A report to the Minister for Health in 1986 by the Ministerial Review Committee established in 1984 to look into health promotion and education in Victoria, summarises this view:

*The starting point in changing lifestyles is to recognise their dependence on the social, cultural, economic, physical and political environment (p.4). ...How people live - their way of life - is influenced by powerful family, cultural and social beliefs and by the practical circumstances of everyday life (p.8).*

For many individuals, participation in health-endangering behaviours such as excessive alcohol consumption and tobacco use, often reflects a lack of knowledge, different priorities and fewer life choices. The well established causal relationship between wealth and health (Bauman, 1989), means that for the majority of socially powerless individuals, participation in health-endangering behaviour takes precedence over hazy long term considerations of health and longevity (Hetzl and McMichael, 1989).

## Cardiovascular Disease

The modification of risk factors for cardiovascular disease is a key public health priority in Australia. Recent developments include major efforts to develop effective strategies and programmes for use in occupational settings (Owen, et al., 1989). Although there has been a dramatic decrease in deaths from coronary heart disease in Australia over the last 20 years, it remains the largest single cause of death (National Heart Foundation, 1988) (Figure 2.1).



Deaths from coronary heart disease and other forms of cardiovascular disease, including stroke, make up almost half of all deaths in Australia each year. In fact, 55,080 people (or 46 per cent) of the 119,866 deaths which occurred in 1988 were due to cardiovascular disease. This amounts to more than 1 death from cardiovascular disease every 10 minutes. In contrast, causes of death which achieve a great deal of media attention, such as violent crime, motor vehicle collisions and AIDS, account for only about 3 per cent of deaths annually (Shaw and Walker, 1991).

## Research Findings in the Community

The 1989 Risk Factor Prevalence Study Number 3, conducted by the National Heart Foundation (Australia) on lifestyle disease risk factors shows the prevalence of cardiovascular risk in the community.

1. **Alcohol** - In the community, 87 per cent of males and 75 per cent of females said they drank alcohol, with increasing numbers of non-drinkers in the older age groups. Sixty-two per cent of males and 40 per cent of females consumed alcohol at least once a week. On days when alcohol was consumed, 78 per cent of males and 92 per cent of females said they usually had between 1 and 4 drinks.

In summary, 80 per cent of males were either non-drinkers or no risk drinkers, 14 per cent were low risk drinkers, 5 per cent were intermediate risk drinkers, and 1 per cent were high or very high risk drinkers.<sup>(1)</sup> There was very little variation in this pattern across ages. For females, 25 per cent were non-drinkers, 71 per cent were low risk drinkers, 4 per cent were intermediate risk drinkers, less than 1 per cent were high or very high risk drinkers, and in subjects aged 50-69, there were more non-drinkers and correspondingly less low risk drinkers than in younger age groups.

Alcohol is associated with many social and health problems, and in Australia alcohol consumption is traditionally very high. Alcohol is a factor in approximately one-third to one-half of all road fatalities (Hetzl and McMichael, 1989). At the other end of the scale, one of the early effects of excessive drinking is deteriorating work performance. Productivity losses and industrial accidents attributable to alcohol are estimated to cost \$1,000 million annually (Australian College of Occupational Medicine, 1990). Alcohol is a major cause of cirrhosis of the liver, a variety of cancers and several other diseases. It is also a significant cause of absenteeism due to hangovers and disease (Australian College of Occupational Medicine, 1990).

Within the Victoria Police between 1980 and 1985, on average, there were three off-duty police officers killed in motor car collisions every year due to drinking and driving. Approximately 75 per cent had a blood alcohol concentration over .15 mg/100 mls (Report by the Police Surgeon's Office, 1986). Later figures indicate a similar trend.

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<sup>1</sup> According to the National Heart Foundation (1989), a no risk drinker means no risk to health. An average daily intake of 3 drinks or less means low risk for females and no risk for males; an average daily intake of 4 drinks or 9-12 drinks in any one day means intermediate risk for females and low risk for males; an average daily intake of 5-8 drinks or occasional excess means high risk for females and intermediate risk for males; an average daily intake of 9-12 drinks or frequent or great occasional excessive intake means very high risk for females and high risk for males; and an average daily intake of 12 drinks or over for females or males means a very high risk.

2. **Blood Fats** - Of those in the community aged between 18 and 65 years, the average plasma cholesterol level was 5.42 mmol/L in males and 5.30 mmol/L in females. Forty-seven per cent of males and 39 per cent of females had plasma cholesterol levels of 5.5 mmol/L or more, the level the National Heart Foundation regards as higher than desirable. Sixteen per cent of males and 14 per cent of females had levels of 6.5 mmol/L or more. In males and females, the prevalence of raised plasma cholesterol levels increased with age.

In males, average plasma triglyceride concentration increased until age 60-64 (1.67 mmol/L), then fell to 1.52 mmol/L. There was a marked increase at age 35-39 and 17 per cent of males and 7 per cent of females had plasma triglyceride concentrations of 2.0 mmol/L or more.

The Framingham Study and the Multiple Risk Factor Intervention Trial (MRFIT) have shown a curvilinear relationship between serum cholesterol and cardiovascular mortality (Cunningham, La Rosa, Hill and Becker, 1988). The effectiveness of lowering cholesterol in reducing cardiovascular disease mortality was shown in the Coronary Primary Prevention Trial of 3,806 hypercholesterolemic men, where a 1 per cent decrease in serum cholesterol was associated with a 2 per cent decrease in mortality (Cunningham, et al., 1988). In the North Karelia Project in Finland, a comprehensive health education programme has been responsible for a decrease of 24 per cent in coronary heart disease mortality in men between 1969 and 1979 (Puska, Niemensivu, Puhakka, et al., 1983). Dietary change, particularly a reduction in overall fat intake, is the cornerstone of hyperlipidaemia treatment (Watson, 1988).

3. **Blood Pressure** - In the National Heart Foundation Study, the average systolic blood pressure for males and females aged between 20 and 69 was 129 mm Hg and 122 mm Hg respectively. The average diastolic pressure for males was 82 mm Hg and for females 76 mm Hg. Seventeen per cent of males and 13 per cent of females were hypertensive.<sup>(2)</sup> Eleven per cent of males and 5 per cent of females had diastolic blood pressures of 95 mm Hg or more, whether on tablets or not.

High blood pressure is a widespread and common disease in Western society, and leads ultimately to two major effects - strokes and heart disease (Australian College of Occupational Medicine, 1990). Blood pressure control in the work force means, amongst other things, less heart disease and less strokes, leading to better health, less disability, more productivity and less absenteeism. About 25 per cent of acute myocardial infarctions are attributable to elevated blood pressure, and at least 20 per cent of hypertensive patients (systolic blood pressure greater than 140 mm Hg or diastolic blood pressure greater than 90 mm Hg) go undetected (Shaw and Walker, 1991).

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<sup>2</sup> For the purpose of the National Heart Foundation report, all people who stated they were taking tablets for blood pressure, plus all people not on tablets but with a diastolic blood pressure of 95 mm Hg or more were defined as hypertensive.

4. **Body Weight** - The average weight of males was 78 kg and of females 65 kg. Average weight was highest in the age range 45-59 for both males and females.

5. **Overweight and obesity** - The estimates of whether a person was underweight, of acceptable weight, overweight or obese were based on the determination of body mass index (BMI), which was calculated as weight (in kilograms) divided by the square of height (in metres) (Quetelet, 1833). The following criteria were applied: less than 20 kg/m<sup>2</sup> was deemed to be underweight; 20 kg/m<sup>2</sup> to 25 kg/m<sup>2</sup> was considered acceptable weight; greater than 25 kg/m<sup>2</sup> and up to and including 30 kg/m<sup>2</sup> was considered overweight; and over 30 kg/m<sup>2</sup> was considered to be obese. The classification of acceptable weight, overweight, and obesity was based on recommendations of the National Health and Medical Research Council (1985).

The average BMI for males was 25.3 kg/m<sup>2</sup> and 24.3 kg/m<sup>2</sup> for females, generally increasing with age. The prevalence of overweight or obese males increased from 25 per cent at age 20-24 and levelled out at about 60 per cent of males older than 45. For females, the prevalence of those overweight or obese increased from 17 per cent at age 20-24 to 57 per cent at age 65-69. At all ages, the prevalence was less in females than in males. Overall, obesity was more prevalent among females (11 per cent) than males (9 per cent), particularly in the older age groups. A direct relationship has been demonstrated between obesity and high lipid levels, which are of course acknowledged risk factors (Australian College of Occupational Medicine, 1990). In addition, in a report by the American Dietetics Association (1986), it is claimed that absenteeism in the United States is 100 per cent higher in overweight employees.

6. **Underweight** - Overall, 4 per cent of males and 15 per cent of females were underweight, the prevalence being highest among younger females (29 per cent at age 20-24).

7. **Diet** - On average, 20 per cent of males and 27 per cent of females said they were following a special diet. A fat-modified diet to lower blood fat was reported by 11 per cent of males and almost 13 per cent of females, while a little over 6 per cent of females and 2 per cent of males were following a weight-reduction diet. At all ages, women were less likely to add salt to their food than men. Overall, 58 per cent of females rarely or never added salt to their food compared with 49 per cent of males.

Diet plays an important part in cancer, high blood pressure and heart disease. A healthy diet is within the reach of all Australians at work (Australian College of Occupational Medicine, 1990). However, at the present time the Australian diet is excessive in refined sugar and fat, and is generally deficient in grains and fibre (Sali, 1990).

8. **Exercise** - A total of 38 per cent of males and 30 per cent of females said they had engaged in vigorous physical exercise during the preceding fortnight for sport, recreation or health-fitness purposes. Conversely, 35 per cent of males aged 20-24 years had not engaged in any vigorous physical exercise during the previous fortnight. This increased to

90 per cent for those aged 65-69. The corresponding figures for females were 45 and 91 per cent respectively. In both sexes, the prevalence of vigorous exercise decreased progressively and sharply with age.

Across all ages, 6 per cent of males and 4 per cent of females took an average of three or more sessions of vigorous exercise per week at an average of 20 minutes or more per session. The prevalence of this level of exercise also decreased with age for both sexes from 11 per cent in males aged 20-24 to 2 per cent aged 65-69; and from 8 per cent of females aged 20-24 to 2 per cent aged 65-69.

Research shows that those who do not regularly exercise are ill five to eight times as often as those who exercise (World Health Organisation, 1988). The Australian College of Occupational Medicine (1990) report states that due to the association between a sedentary lifestyle and heart disease, some effort towards increasing worker's physical activity is warranted. Powell, Thompson, Caspersen, et al. (1987), in a review of 43 studies of regression coefficients between physical activity and coronary heart disease in males showed interesting results. They found that regular physical activity was associated with a reduced overall risk of coronary heart disease. The effect of physical activity on coronary heart disease was also found to be independent of its effect on other known risk factors (such as smoking). As well, potentially important interactions were found to exist between physical activity and other risk factors, particularly hypertension and obesity. In another study over eight years of asymptomatic men, it was found that lower levels of physical fitness were associated with a higher risk of death from coronary heart disease and cardiovascular disease in clinically healthy men, independent of conventional risk factors (Ekelund, Haskell, Jeffrey, et al. 1988).

**9. Smoking** - The relationship between heart disease and smoking is well established. In spite of this, 24 per cent of males and 21 per cent of females were found to smoke cigarettes regularly. Of these, the males averaged 18 and the women 15 cigarettes a day. In fact, 74 per cent of males and 63 per cent of females smoked more than 10 cigarettes a day, and 29.2 per cent and 20.6 per cent respectively more than 20 a day.

Smoking remains the single most preventable cause of death and disability in the Australian work force. For example, Australians who smoke 15 or more cigarettes per day have been shown to have an average of nearly twice as many days off work sick as non-smokers (Athanasou, 1979).

Most studies conclude that smokers cost employers several hundred dollars a year more than their non-smoking counterparts (World Health Organisation, 1988). Smoking also impacts on Australian industry in terms of sickness, premature death, interactions with occupational exposures, passive smoking and additional service costs associated with smoking (Australian College of Occupational Medicine, 1990).

Smokers also increase their "coronary age" by about ten years. Males and females aged 40-49 years of age have nearly four times the risk of having a heart attack (National Heart Foundation, 1988). They also have approximately a 70 per cent greater chance of dying at any particular time than non-smokers (Australian College of Occupational Medicine, 1990).

10. **Multiple major risk factors** - The simultaneous occurrence of risk factors has important implications because of interactive effects. The three major established risk factors for cardiovascular disease are high blood pressure, high blood cholesterol and cigarette smoking.<sup>(3)</sup> According to Haag (1987), the significance of examining mortality and risk factors is that it is thereby possible to change lifestyle habits and hence lessen the risk of lifestyle diseases.

In the community, 42 per cent of males and 35 per cent of females had 1 risk factor, 8 per cent of males and 5 per cent of females had 2 or more, and 1 in 200 males and 1 in 500 females had all three risk factors. Some important underlying risk factors and their major conditions are shown in Table 2.1.

<i>Table 2.1 Risk Factors for Major Conditions.</i>	
<i>Coronary Heart Disease</i>	<i>Cancer</i>
Cigarette smoking High blood pressure Raised blood cholesterol Lack of exercise	Cigarette smoking Excessive sun exposure Diet?
<i>Accidents including motor cars</i>	<i>Strokes</i>
Alcohol abuse	High blood pressure Diet

*(Adapted from a report by the Australian College of Occupational Medicine (1990), entitled "Health Promotion in Industry", p.6-7).*

## Police Health and Fitness

There is a serious lack of sustained and rigorous research conducted into the health and fitness of officers of law enforcement agencies, with much of the evidence presented often

<sup>3</sup> For the purpose of the National Heart Foundation Report, the following definitions have been used. (1) High blood pressure: diastolic blood pressure  $\geq 95$  mm Hg; (2) High blood cholesterol: plasma cholesterol  $\geq 6.5$  mmol/L and (3) Cigarette smoking: Smoking one or more manufactured and/or "hand-rolled" cigarettes daily (cigar and/or pipe smoking is not included).

being anecdotal in nature. Given the demands and difficulties of policing, the need to address the obvious lack of health and fitness promotion is clear.

In a report by the United States National Advisory Committee on police (1973), it was identified that there was an "...unpredictable need for sudden strenuous activity, which required police to maintain higher levels of fitness than many occupations..." (p.501-502), indicating the importance of physical fitness. For example, figures obtained from the Victoria Police "Statistical Review of Crime" for 1989/90, show that there were 1,775 cases of resisting arrest, 418 of obstructing or hindering police, and a total of 156 serious assaults on police.

High risk, physically demanding occupations such as policing are also associated with high medical costs (Superko, Bernauer and Voss, 1988). Superko, et al. (1988) further state that it was rising cardiovascular disease rates and disability costs that prompted the California Highway Patrol to initiate a workplace health and fitness programme. A total of 4,480 officers participated in the programme involving health and fitness assessments every six months. Those who did not meet certain standards were given remedial training prescriptions. Superko, et al. (1988) concluded that physical fitness improved and that the programme was also responsible for decreasing systolic blood pressure, reducing sick days taken, medical costs, on-the-job injuries, and coronary heart disease (9.2 per cent between years 1 and 2, and 13.5 per cent between years 2 and 3).

Recently, a group of British psychologists examined the relationship between psychological and physiological feelings of well-being and physical activity levels (Norris, Carroll and Cochrane, 1990). Groups of police were put through aerobic (endurance) training for a 10-week period, while a control group did no exercise. The police were surveyed in relation to their general health, job satisfaction and quality of life before and after training. The police who did aerobic exercise responded favourably on all three aspects after training, while the control group reported no significant changes.

In a study by Stamford, Weltman, Moffatt and Fulco (1978) of 136 police officers of the Louisville Police Department, it was concluded that the physical demands associated with police work were too low to maintain physical fitness. Stamford et al. (1978), also found that after only one year, the physical fitness of new graduates had declined to their low pre-Academy training level.

Donato and Pounds (1985), draw attention to a recent nationwide survey of 635 law enforcement agencies in the United States, in which nearly 50 per cent of early retirements were attributed to heart attacks, back trouble and permanent injury suffered while on duty. In the Victoria Police during the period 1989/90, 23.6 per cent of all retirements were due to ill-health. The average age of these premature retirees was 39.

Horowitz and Baker (1987), in a study of 120 randomly selected male law enforcement officers from Texas, found that police officers who reported their health as "poor" were absent nearly 7 times more often than those reporting they were in "excellent" health. Low

physical activity levels were found to be related to absenteeism in officers with six to ten years service.

According to Smith and Dunphy (1987), an increasing number of law enforcement agencies are starting to recognise the benefits of implementing health and fitness programmes at work. Benefits to be gained include increased efficiency and morale, reduced injury rates and less medical retirements.

## Legal Implications

If physical fitness is a major requirement for effective policing, then all law enforcement agencies should continue to be concerned with maintaining physical fitness after graduation of police officers (Carter, 1982). Carter states:

*A failure to be so concerned could result in civil liability for the government agency and its supervisors. ...a law enforcement agency will be remiss if it does not see to it that its officers maintain the degree of physical fitness required to perform the tasks of a police officer (p.15).*

There is a recent case in the United States for example (*Parker v. District of Columbia, 1988*), where a claim of \$425,046.00 was awarded to a man who was shot by a District of Columbia police officer in the course of an arrest. The theory supporting liability was *inadequate training* - the District officer had received no physical training in four years and was physically incapable of subduing Mr Parker during a scuffle. When Parker allegedly made a movement consistent with reaching for a gun, the officer shot Parker twice. The court ruled that had the officer been physically fit and adequately trained, a gun would never have been necessary (Trimmer, 1990). In summarising the preceding case, Trimmer makes the following statement:

*Poor physical condition enhances the chance a suspect will escape arrest when the society's protection demands arrest, the core business of law enforcement (p.25).*

## Organisational Culture

An organisation's culture has been defined in various ways. For example, it has been defined as part of the organisation's soul; a style or characteristic that may exert far more influence than any single individual (Peters and Waterman, 1982). It has also been described as a system of shared values and beliefs that produce norms of behaviour (Smircich, 1983). It is a product of the interaction among managerial functions; the organisation's behaviour, structure and process; and the larger environment in which the organisation exists (Ivancevich and Matteson, 1987). Within law enforcement agencies,

there is a dominant culture based on common values and aspirations (Bird, 1990). This culture arises out of a need to be able to depend on other officers in times of physical danger and mental stress. There is also a tendency for police to be isolated from the general community because of their occupation (Bird, 1990).

In the United Kingdom, an extensive survey into the operation of London Police was carried out, where research officers also spent several months with police on patrol. The research officers described the Force as having dominant values similar to an all-male institution, where drinking alcohol was seen as a test of manliness and a basis for friendship (Smith and Gray, 1985).

Cultures are self-reinforcing, once in place, they provide stability and certainty for their officers. Every organisation has a culture developed to some extent, and that culture can either have a positive or negative force (Ivancevich and Matteson, 1987). Negative cultures can be counterproductive to an organisation's goals and objectives. In this study, the influence of organisational culture is held to be an important factor when considering behavioural change initiatives.

## **The Effectiveness of Workplace Health Promotion**

The Chairman of the National Steering Committee (Australia) on Health Promotion in the Workplace (McMichael, 1990) has defined workplace health promotion as:

*...those educational, organisational or economic activities at the workplace that are designed to improve the health of workers and therefore the community at large. This type of health promotion involves workers and management participating on a voluntary basis in the implementation of jointly agreed programs which utilise the workplace as a setting for promoting better health...(p.16).*

The question remains whether health promotion in the workplace is effective in reducing health risk factors and enhancing employee health. A variety of responses are presented in the literature.

Workplace health promotion programmes have represented a type of employee benefit that has also been linked to a variety of benefits for both the employer and the employee. These include enhanced employee morale, improved productivity, decreased health care costs and hospitalisation, reduced sickness and absenteeism, improved job satisfaction, higher recruitment levels, an improved corporate image, and as an added benefit, an efficient way to support and maintain healthy lifestyle changes (Orlandi, 1986). Cox (1987), in support of workplace health promotion states:

*Present research and practical experience suggest that employee fitness programmes may have a beneficial influence upon the employee and employer. Although all the mechanisms for positive results that have been related to such programmes are unclear, it seems that enough evidence is present to proceed at least cautiously with further programme implementation (p.349).*

Pelletier (1986), is more optimistic when he states:

*...it is sufficient to note that virtually every organisational health promotion programme, whether limited or holistic, has demonstrated itself to be consistent with individual and organisational objectives as well as cost-effective (p.360).*

However, there are some who are not convinced of the effectiveness of workplace health promotion. Haag (1990) cautiously points out that the success of workplace health promotion programmes in general has been varied. Alexander (1988) reports that many corporations have recognised current methodological limitations in the state-of-the-art workplace health promotion programme and have been forced to circumvent their own cost-benefit calculations and rely instead on faith and luck.

One of the major difficulties in the area is that programmes experience a high drop out rate (Glasgow and Terborg, 1988; Conrad 1988; Alexander, 1988) making it difficult to ascertain the long term effect in reducing cardiovascular risk. Sallis, Hill, Fortman et. al. (1986) argue that the scientific basis for believing workplace health promotion programmes are effective is weak, except in cases of multiple risk factor intervention for high risk individuals. The authors further contend that overall, cost effectiveness has not yet been demonstrated in all areas.

While many of the claimed benefits have not been empirically demonstrated, there is a widespread belief that workplace health promotion programmes can have significant positive effects (Conrad, 1988). In the absence of such scientific evidence, however, Haag (1990) contends that the majority of employees at worksites where programmes are offered do not attend and are not affected by employee health and fitness programmes.

The World Health Organisation (1988) has stated in their report "Health Promotion for Working Populations":

*Many more studies need to be undertaken to assess the positive value of workplace health promotion in terms of improved health and healthy behaviour, reduced absenteeism, reduced health care costs, less frequent disability, increased productivity and reduced turnover of employees (p.13).*

The World Health Organisation report does, however, acknowledge that concrete evidence is difficult to obtain because workplace health promotion studies are so methodologically complex, organisationally difficult and in some ways ethically controversial.

Edye, Mandryk, Frommer, Healey and Ferguson (1989), studied 2,489 Australian government workers, finding that changes in the levels of risk factors favoured the randomly selected intervention group marginally and appeared to vary with sex, age and occupation. A significant though clinically small effect was noted on systolic blood pressure (a reduction of 1.14 mm Hg). The authors concluded that individual counselling, as undertaken in their study, is generally ineffective in the long term modification of mildly elevated cardiovascular risk factors.

Benefits however have been noted as a result of the introduction of stress management strategies. For example, the Equitable Life Assurance Society of the United States implemented a stress management programme utilising biofeedback, finding that a cost-benefit analysis of the programme suggests that for every dollar invested, there was a \$5.52 return-on-investment in terms of health care services, efficiency and insurance costs (Manuso, 1983).

Keifhaber and Goldbeck (1983) suggest that even modest health promotion programmes can help to reduce health care costs. In 1982, the South Carolina state government initiated an employee health programme called Carolina Healthstyle. After the first year of the programme, there were positive changes in smoking rates, exercise, safety, nutrition and stress (Maysey, Gimare, and Kronenfeld, 1988).

Other programmes have also reported success. During the first six months of the programme at Western Kentucky and Dollar General Corporation, it practically paid for itself, becoming virtually self sustaining (Pelletier, 1988). Similarly, Barzilai (1989) developed a small but widespread programme aimed at reducing cardiovascular risk among 1,004 employees in over 17 sites of a communications company. After a two year follow-up at seven of the sites (involving 322 participants), it was found that among smokers 32.4 per cent had quit. Positive findings were reported for blood pressure with 72.7 per cent of those with blood pressure over 140 mm Hg and/or 90 mm Hg reducing it by a mean of 12.4 mm Hg systole and 9.1 mm Hg diastole. For cholesterol, 54.9 per cent of those above 5.2 mmol/L reduced their reading by at least .13 mmol/L. Among those with one or more risk factors at screening, 54.8 per cent reduced at least one of these factors as a result of the programme.

Programmes have also shown positive effects on other parameters. For example, in the much publicised Live For Life programme of the Johnson and Johnson company, significant positive changes were noted in employee attitudes toward organisational commitment, supervision, working conditions, job competence, pay and fringe benefits and job security. The authors believe that the programme may have changed the underlying values within Johnson and Johnson companies with Live For Life and subsequently their respective cultures (Holzbach, Piserchia, McFadden, et al., 1990).

Klarriech (1987) believes that organisations are becoming increasingly aware that a healthier and happier work force will experience benefits such as better morale, more innovation, greater efficiency and productivity, as well as less absenteeism, illness and accidents. A survey of 1,358 organisations conducted by Fielding (1989) found that 47.1 per cent reported improved employee health, 24.2 per cent increased output, productivity, or quality, 14.2 per cent improved employee morale and 14 per cent reduced health care costs. Unsolicited responses included decreased absenteeism (9.6 per cent), increased awareness and education (5.8 per cent), and the identification of serious health problems (2 per cent).

Sallis et al. (1986) have reviewed several workplace health promotion programmes in the areas of hypertension control, smoking cessation, physical activity and exercise promotion, weight control, stress reduction and multiple risk factor interventions. The authors found that hypertension programmes could be effective, but this was limited by a lack of volunteers for screening, a lack of follow-up by health professionals and a high rate of nonadherence to medication. In direct opposition to those findings, Alderman, Green, and Flynn, (1982) state:

*Hypertension represents an area of health where modest investment ought to yield a great benefit. ...hypertension has the strongest association with subsequent cardiovascular catastrophes, such as heart attack and stroke, and is most responsive to available interventions (p.162).*

As would be expected, smoking cessation programmes are very popular in workplace health promotion, but Sallis et al. (1986) conclude that results are somewhat inconclusive. The authors report surprise at the lack of research in this area considering the extent of the smoking problem. In the 1984 Finnish North Karelia Worksite Intervention Study over one year, the programme showed significant, although modest effects on risk factors and health behaviour, notably smoking among the 700 employees participating (Puska, et al., 1988).

Evaluation of exercise programmes showed that participants made improvements in fitness, as well as reduced cardiovascular risk factors and improved job satisfaction. Employee turnover also decreased considerably (Sallis, et al., 1986). Incentive based weight loss programmes appear to be more effective, cost efficient and stimulate more participation, however, attrition rates were high and maintenance tended to be low in the organisations studied.

In studying six stress reduction programmes, Sallis, et al. (1986) identified a variety of techniques in use including meditation and relaxation. The inadequacy of measures used however, made it difficult to draw conclusions. Nonetheless, the authors argue that multiple risk factor interventions are more desirable, as they maximise the probability of health behaviour change. Of the ten evaluations of multiple risk factor interventions reviewed by the authors, most had positive results.

In the largest worksite study ever conducted (World Health Organisation European Collaborative Group, 1983), 66 worksites in four countries involving 49,781 men, were randomly assigned to treatment or control conditions in a six year study. The risk factors targeted were dietary fat and cholesterol, smoking, obesity, lack of exercise and adherence to medication for hypertensives. While there were differences in results among countries, an overall reduction of 11 per cent in risk factors was significant. Death due to coronary heart disease, however, did not show a significant reduction. A twelve year follow-up of ten British factories showed continuing benefits in the areas of diet and smoking, but not in physical exercise patterns. This study demonstrated that multiple risk reduction programmes at the workplace can have a significant positive impact on selected risk factors associated with cardiovascular disease (Sallis, et al., 1986).

Fleming (1987), reviewing a programme among 585 bank employees in Minnesota, found significant changes in nutrition, exercise and alcohol consumption. In another study by Ostwald (1989), employees were randomly assigned to one of three intervention groups and exposed to varying degrees of health and fitness programmes over a twelve week period. All three groups made significant changes in health status, with the group which was exposed to the most programmes significantly reducing their weight, percentage body fat, resting heart rate, while increasing their flexibility. Unfortunately, no follow-up was conducted to determine attrition and long term compliance rates.

As stated above, the need for follow-up studies is important. For example, in a follow-up by Forster, et al. (1988), the weights of 149 participants were measured one year after treatment. Participants had regained an average of 75 per cent of the weight they had lost during treatment. Only 21 per cent maintained their immediate post-treatment weight or continued to lose weight.

An analysis of the Control Data Staywell programme initiated in 1982 in the United States, including instructor led classes, self-study, and other programmes showed significant reductions in absenteeism, health care claims, and health related risk factors (Jones, 1987).

The National Steering Committee (Australia) on Health Promotion in the Workplace (1989), in their review of the established literature concluded:

*...there is enough evidence from North America, Europe and Australia to strongly suggest that properly planned and implemented programmes can have significant effects on: reducing blood pressure, reducing and stopping smoking and reducing blood cholesterol levels (p.11).*

## **Economics of Workplace Health Promotion**

What are the costs of workplace health promotion? Can they be self-sustaining? Is it necessary for programmes to be self-sustaining or supporting? Do the alleged benefits offset the cost factors? These questions need to be examined in detail.

In a report by the Australian College of Occupational Medicine (1990), the authors state that with a reduction of 10 per cent of coronary heart disease and hypertension, 20 per cent of cancers, 10 per cent of respiratory disease and 20 per cent of alcohol related illness, significant savings could be achieved.

According to Pelletier (1984), "...good health is good business..." (p.133). He further states that workplace health promotion programmes "...must be at least self sustaining, and even profitable, if they are not to disappear..." (p.135).

Wilbur (1983) offers a traditional cost-benefit perspective when he states:

*Health promotion in industry should be linked to a "cost containment" strategy and managed like any other business endeavour. It should be thought of as a marketing process which produces widespread and sustained employee participation in healthful activities (p.672).*

A cost-benefit analysis incorporated in the planning process to establish the worthiness of the programme is essential (Owen, et al., 1986). Management *by numbers rather than faith* helps legitimise health promotion as a critical part of a company's business (Wilbur, 1983).

In the so called information society, Nasbitt and Aburdence (1985) believe that human capital has replaced dollar capital as the strategic resource, and that people and profits are inexorably linked. Chen (1988) explains that for the great majority of American employers, the rationale for workplace health promotion programmes has gone beyond a corporations' own economic concerns to concerns for the employee. Although true in some cases, in the majority of organisations such an altruistic notion may not prevail. A scientific analysis of the cost effectiveness of workplace health promotion programmes must be undertaken before widespread acceptance occurs.

Fielding (1987) argues:

*Despite the number of reports of impressive programme results, the current evidence stops short of proof beyond a shadow of a doubt that investment in programmes will provide an acceptable return from a strictly financial point of view (p.278).*

There is a deficiency of compelling evidence that even the most intensive programmes, although effective in improving health, actually provide a return-on-investment (De Muth, Fielding, Stunkard et al., 1986). The authors suggest however, that intuitive or subjective feedback may be more relevant to organisations than are cost effectiveness data.

Chadwick (1982) says that since cost effectiveness in programmes is not very well understood, it is difficult to achieve. Edington (1987) also questions the effectiveness of workplace programmes in achieving the long term goal of cost containment. Matteson and Ivancevich (1988) define cost effectiveness as related to the determination of the extent to

which programme objectives are met and how much it costs to meet them. In supporting Chadwick's (1982) assertion regarding the difficulty of determining cost effectiveness, the authors state that what makes this analysis a particularly challenging task, is that the assignment of a monetary benefit for many outcomes is very difficult, if not impossible to achieve. Matteson and Ivancevich (1988), elaborate on this point by illustrating the problems associated with any attempt to determine the worth of increasing employee satisfaction or energy levels. Jones (1988) in a survey of 200 Australian organisations where demonstrated savings to the organisation as a result of implementing workplace health promotion programmes could be shown by 23 per cent of respondents, while 72 per cent indicated no known savings.

Haag (1987) emphasises that the benefits derived from workplace health promotion and programme cost effectiveness have not been categorically established in the Australian situation. Management needs to be convinced that these programmes are at least cost efficient. It would appear, however, that only a few companies have made an effort to rigorously evaluate the impact of their respective health promotion programmes. As a result, the literature offers only mixed conclusions regarding the benefits of health promotion to the organisation. Nevertheless, there are many indicators of positive economic effects of workplace health programmes as more results emerge and interest in the area increases (World Health Organisation, 1988).

## **Methodological Considerations**

Various methods of implementation of workplace health promotion are available. The phased in approach, or pilot study, has several benefits including lower initial workload, gradual investment, easier adjustments and employee freedom to enter the programme when ready (Parkinson, 1982).

Believing that all positive outcomes are a direct result of the programme implemented is a common pitfall (Komaki and Jensen, 1986). Researchers find this particularly tempting when expected outcomes eventuate. Although pre-treatment and post-treatment comparisons are better than none at all, plausible alternatives to explain general and specific results must be ruled out before any major conclusions can be drawn (Komaki and Jensen, 1986).

Normally the use of control groups can eliminate confounding factors, but in most work settings, suitable control groups are difficult to arrange (Komaki and Jensen, 1986). For this reason, the use of within-group designs is normally preferred. In this design, comparisons are made within the group, with the group serving as its own control (Komaki and Jensen, 1986). To summarise the literature, it is apparent employee health and fitness promotion needs well designed experimental trials in the work environment, rigorous evaluation of new and existing programmes (Owen, et al. 1989), as well as widespread employee and management support. To gauge the efficacy of any particular programme,

Chapman (1987) contends that in contrast to rigorously designed and controlled evaluation, research *must* combine practical evaluation with the concern for validity and reliability of results. If sound evaluation occurs, workplace health promotion will be in a better position to ascertain both general and specific outcomes.

## **Chapter 3**

### Methods and Procedures

## Chapter Summary

### Methods and Procedures

*This research intended to measure changes in health and fitness parameters of Victoria Police officers as a result of interventions aimed at influencing positive health and fitness behaviours. Several written instruments were used in data collection throughout the study. Both physiological and psychological parameters were measured before and after the implementation of programme activities. Survey data included dietary and health habits, knowledge and attitudes about health and fitness, coronary risk and programme evaluation.*

*A total of 362 (79.2%) of the officers (86.7% male) in "Y" District attended the Risk Screening Clinic in 1989, and of these, 207 officers (86.5% male) then attended a Fitness Assessment. In 1990, 145 officers (89% male) were retested by the Mobile Risk Screening Clinic and 110 (83.6% male) had a second Fitness Assessment.*

*During the programme a regular newsletter containing items of interest and future activities and events was sent to each officer. A booklet containing information on the location of health and fitness facilities was produced. The health education and lifestyle awareness programme of the study was conducted to motivate officers to develop goals pertinent to health and fitness, enhance their knowledge and skills related to maintaining health and fitness, make resources and activities related to health and fitness readily available, alter the norms of acceptable behaviour (eg. poor dietary habits), teach the concept of self-responsibility for individual health and alter the workplace in a positive way which would be conducive to health-enhancing behaviour.*

*A fruit promotion was undertaken, as well as several Healthy Barbecues and Breakfasts which were conducted at various police stations. A variety of other activities were held, including golf, cricket, tennis, ten-pin bowling and Jump Rope For Heart (National Heart Foundation Skip-a-thon). Stop smoking and stress management seminars were also conducted.*

## Chapter 3 Methods and Procedures

This chapter describes the research design, the subjects, the apparatus and data collection procedures, as well as the statistical treatment of the data. The italicised explanation under each heading provides a brief explanation of salient points.

### Research Design

*A single group experimental design was employed in this study, as the use of a control group was not deemed practical. Physiological and survey measurements were taken before and after a 12 month health promotion programme to determine its effectiveness.*

The target population in "Y" District was comprised of 457 police officers with approximately 13 per cent being female. The study involved physical and health testing, as well as the administration of surveys before and after a voluntary health promotion programme of 12 months. Testing involved VO<sub>2</sub> submaximal assessment by means of cycle ergometry, body composition, selected strength and flexibility measures, lung function, coronary risk screening (blood lipids, blood pressure, diabetic status) and written instruments (lifestyle assessment).

The health promotion programme involved a regular newsletter containing items of interest pertaining to health and fitness and future activities; a booklet containing information on the location of health and fitness facilities and services offered, nutrition promotion through healthy barbecues and breakfasts; exercise promotion through physical activity days; and health seminars on stress management and smoking cessation.

### Limitation of the Study

Prior to the commencement of the study, consideration was given to the use of a control group to demonstrate the effect of the programme by showing no change or different changes in a control. Such a group could be either within the pilot district, or in another comparable district. No control group was used because neither of these alternatives was considered viable. For example, obtaining the measures required for comparison, namely the Risk Screening Clinic and Fitness Assessment results without having a contamination effect on the control subjects was considered unlikely. Obtaining results without providing them to the subjects, quite apart from any ethical obligation, was not supported by Force Administration.

Problems could also have arisen in obtaining participation from control subjects. In addition, the cost and time commitment of running a control group would have reduced the time and effort available for the programme itself, thus limiting the potential impact and reducing subsequent change. Finally, it was considered that a degree of animosity and a

spill over effect might occur to the rest of the department, particularly adjoining districts. In hindsight, this was confirmed through anecdotal accounts from adjoining districts where members were desirous of becoming a part of the study. It was decided therefore that a single pilot district be chosen without the use of any control group. By not utilising a control group, it is recognised that this is a limitation of the study.

A police geographical region called "Y" District was chosen as the research pilot district because of its uniformity and representativeness of what was considered to be a large metropolitan police district. The limitations associated with this assumption have previously been considered (Chapter 1). "Y" District formed a triangle in shape from Burwood to Marysville and Emerald (see Appendix A for map). There were twenty police stations, five Criminal Investigation Branches, one Traffic Operations Group, and one Community Policing Squad in the district (see Appendix B for actual locations).

## Subjects

*Subjects comprised volunteer participants from the police area called "Y" District.*

Officers gazetted to "Y" District on the 31st of July, 1989, formed the target population. The Police Personnel Branch supplied a complete list of personnel gazetted to "Y" District on that date. Ages ranged from 22 to 60 years, and service from 2 to 37 years. Ranks ranged from constable to chief superintendent. Probationary constables were excluded because of the recency of their training and their transient status making them unrepresentative of average police.

It should be noted that prior to the completion of the study, the geographical boundaries of "Y" District were changed due to a Force restructuring programme called Project Arbiter. As of the 4th March 1990, "Y" District no longer exists as described above. The new "F" District created as a result of Project Arbiter is very similar to the old "Y" District. The implications of this change on the study are discussed later in this report.

## Development of Survey Instruments

The survey instruments used throughout the study (except for the Risk Screening Clinic Questionnaire) were designed specifically for use during this study. Each instrument was designed with two primary considerations in mind:

- (a) Relevance to the Victoria Police and its employees; and
- (b) To fulfil the requirements of the study in terms of measuring health behaviours, establishing base-line data, and using the information as a platform from which to plan subsequent programming.

In developing the instruments, some of the questions and information was taken from a number of different sources and adapted where necessary to meet the specific needs of the study.

The following instruments were used during the study:

- (a) **Health and Fitness Survey (Appendix C {1})** - Many of the questions were adapted from the "National Survey of Exercise, Fitness, and Health", from the programme *Activity and Health*, a research programme in the United Kingdom, (July, 1980). Other questions were generated based on study needs.
- (b) **Information Sheet for Graded Fitness Test (Appendix C {2})** - This information sheet was adapted from a similar instrument used by "Life. Be In It.", Glen Waverley, (1989).
- (c) **Personal History Sheet (Appendix C {3})** - The Personal History Sheet was based on the *Physical Activity Readiness Questionnaire (PAR Q)*, PAR Q Validation Report, (1978). The Personal History Sheet was used as an additional tool to determine the suitability of subjects to complete submaximal fitness testing.
- (d) **Consent Form (Appendix C {4})** - The consent form was developed primarily to ensure subjects were fully conversant with the nature of the study and that they were willing to participate in all tests, and to enable them to give their express permission for their Risk Screening Clinic results to be used for the purpose of statistical and research purposes.
- (e) **Fitness Assessment Form (Appendix C {5})** - The Fitness Assessment Sheet was developed as required in accordance with the battery of tests conducted.
- (f) **Evaluation Survey (Appendix C {6})** - All questions were developed specifically for the study. Although some health measures were in the Survey, it was primarily designed to assist the evaluation process.
- (g) **Fitness Assessment Booklet (Appendix C {7})** - The Fitness Assessment Booklet was adapted from a booklet produced by the Melbourne City Baths (1989) and offered participants informative, succinct information in relation to their Fitness Assessment results.

The results obtained from the Risk Screening Clinic were also utilised to provide further information regarding the subjects' overall health and fitness status. No single test was used as a "screening device" to exclude subjects from the physical work capacity test, but rather an assessment of each subjects' suitability was made based on all the information available.

## **District Notification**

Meetings were held with District Command and Divisional Officers to outline the study's objectives and to discuss the study in detail. District conferences, involving all Officers in Charge within the district were also attended prior to programme implementation and on several occasions during the programme to ensure those in charge of stations were kept informed regarding programme activities.

Letters which included a study endorsement from the Chief Commissioner of Police, the Department of Sport and Recreation, and the Police Association (Appendix D) were sent to all "Y" District officers to formally introduce them to the study, outlining the aims, purpose and format of "Operation Physicop", and inviting them to participate in the Risk Screening Clinic and Fitness Assessment.

Officers were requested to contact the Risk Screening Clinic directly to make an appointment. Once officers had been tested by the Risk Screening Clinic, and if desirous of undergoing a Fitness Assessment, they were then requested to contact designated personnel at one of the four nominated police stations close to their own station where Fitness Assessments were to be held.

To further encourage participation, three weeks into the testing period letters were sent to those officers who had participated in the Risk Screening Clinic but who had not attended the Fitness Assessment (Appendix E {1}). Letters were also sent to members who had not participated in either the Risk Screening Clinic or the Fitness Assessment (Appendix E {2}).

## **Project Launch**

*A launch was held to inform the public and other police through the media about "Operation Physicop", and to emphasise its importance to officers in "Y" District.*

The project launch was conducted at the Nunawading Police Station on 16th August, 1989. It was organised through the Police Media Liaison Bureau and the Department of Sport and Recreation Media Department. Assistant Commissioner Robertson and Mr Terry Norris (Member of Parliament and Member for Dandenong) representing the Department of Sport and Recreation attended. A media release with information about the study and the launch was sent to media outlets, particularly local papers within the district (Appendix F). A large display board was prepared by the Victoria Police Display Section. A rowing machine and other fitness related equipment were used as props for police officers to be photographed by the media. A number of sections involved in the study were also invited to participate, including the Psychology Unit, Director of Health Services, Police Association and Department of Sport and Recreation representatives.

## Brief Description of Tests Conducted

(a) *Risk Screening Clinic* - Cardiovascular risk was assessed by means of a series of tests conducted by the Risk Screening Clinic at the Victoria Police Hospital. The tests included cholesterol, triglycerides, blood pressure, Body Mass Index (BMI), overall coronary risk and a Lifestyle Questionnaire. The Risk Screening Clinic was visited by participants before attending the Fitness Assessment partially to obtain valuable information relating to contra-indications for fitness testing, and partially to provide excellent feedback to participating officers regarding their present health status.

(b) *Testing at Police Stations (Fitness Assessment)* - Physiological and psychological measurements were made to establish base line data so that comparisons could be made between the pre and post-test measurements. The physiological measures included a submaximal cardiorespiratory test, lung function, body composition, selected strength measures and flexibility. Survey data included dietary habits, current health habits, and knowledge and attitudes about health and fitness.

## Detailed Description of Tests Conducted

### (a) Risk Screening Clinic

The Risk Screening Clinic is situated at the Victoria Police Hospital, Dodds Street, South Melbourne. When volunteer subjects attended the Police Hospital, they were asked to complete a Lifestyle Questionnaire (Appendix G {1}) which included self-reported data on smoking status, alcohol use, diabetic status, dietary habits, family history of heart disease and current exercise patterns.

After completing the Questionnaire, it was checked for completeness by one of two State Registered Nurses, whose services, for the sake of continuity, were used exclusively for the study. The subject was then escorted to the Risk Screening Clinic and the procedure was explained. Participants were asked to remove jackets, jumpers, shoes and any concealed weapons. Height and weight were recorded in stockinged feet.

*Blood Pressure* was measured using a free-standing Accoson Sphygmomanometer. Blood pressure was taken in accordance with the National Heart Foundation's Information Paper entitled "Blood Pressure Mass Screening Guidelines" (1987). Subjects were required to lie on the examination bed where the first blood pressure measurement was taken after approximately five minutes. A standard cuff size of 12 to 14 cm wide was sufficient for most subjects. Where a subject was overweight, a larger cuff, known as a "thigh" cuff, was used to obtain an accurate blood pressure reading. The point of maximum inflation was determined by ascertaining the palpated systolic pressure. The cuff was then rapidly inflated to 30 mm Hg above the palpable systolic pressure and then released at a rate of 2 mm Hg per second. Systolic and Diastolic Phase 5 readings were taken to the nearest 2

mm Hg. If the first blood pressure was less than 90 mm Hg diastolic and less than 140 mm Hg systolic, no more measurements were taken. If the first blood pressure was 90 mm Hg or more diastolic or 140 mm Hg or more systolic, the measurement was repeated twice. In the case of two measurements, both measurements were taken on the same arm. Clinic staff then referred the subject accordingly if deemed appropriate depending on the final reading (usually higher than systolic 140 mm Hg or diastolic 90 mm Hg).

*Anthropometric data* included body weight and height. Body weight was measured to the nearest .1 kg by using a "Wedderburn" Beam Scale weighing unit. This weighing machine is calibrated every 12 months. Height was measured to the nearest .1 cm using a circular metal metric measuring ruler with a metal bar extending at 90° which was lowered onto the subject's head.

*Blood cholesterol and triglycerides* were measured by a Kodak Ektachem DT60. A 1 millilitre (ml) sample of venous blood was taken from the anti-cubital vein or some other convenient arm vein. The collected sample was then placed in a 1 ml centrifuge tube for immediate centrifugation for 90 seconds. Following centrifugation, two 10 microlitres (ul) of serum were pipetted to a Kodak slide for respective cholesterol and triglyceride determination. Blood cholesterol and triglycerides were measured in millimoles per litre of blood (mmol/L).

In maintaining Quality Control levels, daily results were monitored to detect any deviation from the predetermined values by using accepted laboratory procedures. Quality control (QC) was performed twice daily on the DT60 Ektachem machine; that was after completing a calibration and when it was suspected that patient results were inaccurate.

In general, periodic calibration of the DT60 Ektachem Analyser is required to maintain instrument reliability and to compensate for any variables that might occur in translating results. Calibration of the DT60 Ektachem occurs when the Lot number of the Ektachem DT slide changes, or when the results of the QC test using Ektachem DT controls are consistently outside an acceptable range as recommended by Kodak.

*Survey data and anthropometric data* were then entered onto an IBM PS/2 computer with a programme which produced a report titled 'Risk Evaluation Report' (Appendix G {2}). This report included a totalled Self Assessment Score, recorded blood pressure, cholesterol and triglyceride results, BMI, height and weight, desirable weight range based on the calculated BMI, and a calculated overall coronary risk percentile score. This score was calculated based on the results of three measurements and age. The measurements were blood pressure, blood cholesterol and cigarette smoking, which are regarded as excellent predictors of overall coronary risk (Kannel, Neaton, Wentworth, et al. 1986).

*Recommendations* were then made regarding (any) further action required by the subject, such as a three month re-check. *Advice* was then given to subjects by one of the two State Registered Nurses in relation to any lifestyle changes which may have needed to be made such as dietary modification. Health literature available to officers included the current

literature from the National Heart Foundation and other outlets. If deemed necessary, subjects were referred to the Department's dietitian. In the case of a subject whose results were considered to be good, positive reinforcement was given. The entire process normally took approximately 30 minutes from beginning the self-assessment questionnaire to completion of the counselling session.

## Detailed Description of Tests Conducted

### (b) Testing at Police Stations - Fitness Assessment

*Fitness Assessments were conducted on officers who volunteered and who had completed the Risk Screening Clinic.*

The aims of the Fitness Assessment were to:

- (a) gather baseline data;
- (b) motivate positive behaviour changes; and
- (c) assess the current physical fitness status of police officers.

Fitness Assessments were conducted by either the researcher or under the researcher's supervision at Nunawading, Ferntree Gully, Lilydale and the Healesville Police Stations. Tests were conducted at police stations to increase accessibility to the target population, increase interest and awareness in the testing procedure, and to enhance relations and increase the contact between staff and police officers. Subjects were scheduled for fitness testing by telephoning a nominated police officer who acted as the contact at the testing location.

Before undergoing the Fitness Assessment, subjects were asked to read an Information Sheet which detailed information about the Physical Work Capacity test on the cycle ergometer. They were then requested to complete the "Operation Physicop" Health and Fitness Survey (Appendix C {1}) and the Personal History Sheet (Appendix C {3}). If any medical problems became apparent after completing the Personal History Sheet, subjects were questioned and were either cleared or excluded from completing the cycle ergometer test. Subjects had been requested to bring their "Risk Evaluation Report" to the Fitness Assessment. A Flow Chart (Appendix G {3}) served as a general guide for appropriate action.

*Anthropometric data* included body weight and height. Body weight was measured to the nearest .1 kg using "Shcrone" digital scales. A pull-down stadiometer (a rigid metric rule attached to a wall with a plastic set square) was used to measure height. Subjects were barefooted with their feet together, with buttocks and head touching the ruler.

*Skinfold* measurements were taken using Harpenden skinfold callipers. All measurements were made on the right hand side with the subject standing (except for the thigh skinfold) and relaxed. Seven skinfold sites were measured for males and four for females. The seven sites for males were the triceps, pectoral, abdominal, suprailiac, subscapular, thigh and mid-axillary. Waist circumference and wrist width were also measured. In females, the triceps, abdominal, suprailiac and thigh skinfolds were measured. The triceps skinfold was a vertical fold on the posterior midline of the upper arm halfway between the acromion and olecranon processes with the elbow extended and relaxed. The pectoral skinfold was an oblique fold running between the line from the anterior axillary fold and the nipple. The abdominal skinfold was a vertical fold taken at a lateral distance of 2 cm from the umbilicus. The suprailiac skinfold was an oblique fold measured from the top of the iliac crest on the mid-axillary line. The subscapular skinfold was an oblique skinfold taken 1 cm below the inferior angle of the scapula. The thigh skinfold was a vertical fold on the anterior aspect of the thigh, midway between the hip and knee with the subject seated and with their feet flat on the floor. The mid-axillary skinfold was a vertical fold on the mid-axillary line lateral to the inferior aspect of the xiphoid process. Waist girth was measured by placing a plastic measuring tape around the unclothed abdomen over the superior border of the iliac crest. The width of the wrist was measured by using a Harpenden anthropometer which was placed over the styloid processes of the radius and ulna.

The mean of six regression equations was utilised to determine percentage body fat for males from the skinfold measurements taken. The six equations were Zuti and Golding (1974), Katch and McArdle (1973), Sloan (1967), Lohman (1981), Yuhasz (1962), and Jackson and Pollock # 2 (1978). To calculate percentage body fat for females, the mean of three equations was used. They were Jackson, Pollock and Ward #1 (1980), Jackson, Pollock and Ward #2 (1980), and Sloan, Burt and Blyth (1962). The sum of the skinfold measurements was also calculated for all members as suggested by Telford, Egerton, Hahn and Pang (1988).

*Flexibility* was measured by the use of one test. Trunk forward flexion was tested by use of the sit-and-reach apparatus and protocol of Wells and Dillon, (1952). Subjects were permitted to warm-up for approximately two minutes and then were required to sit upright on the floor, with their feet placed either side of a one meter ruler attached to a wooden box. Subjects were then required to place one hand on top of the other so that their fingertips were equal, and then lean forward as far as possible without bouncing. Scores were recorded only if the subject was able to hold the stretch for two seconds. Two attempts were given at the test, with the best result being recorded. If the subject's fingertips were equal to a mark on the ruler parallel to their feet, a score of zero was recorded. If the subject reached further than this mark, the score was recorded as positive (in centimetres). If the subject failed to reach the zero mark, the score was recorded as negative (in centimetres).

*Strength* was measured at the abdomen and hand. Dominant and non-dominant grip strength were assessed using a Smedley's adjustable dynamometer. The handle of the dynamometer was adjusted so the proximal phalanx of the fingers were approximately

under the handle and the subject indicated that the position was comfortable. During the test, subjects stood erect, holding the dynamometer in one hand at an oblique angle to the opposite shoulder and were instructed to squeeze with a maximal effort. Three trials were given and results were recorded to the nearest 1 kg. Abdominal strength was measured using an adapted five stage test where the degree of difficulty increased with each successive stage, scored between one and five (Pang and Dortkamp, 1987). To conduct the test, the subject lied supine with knees flexed at 90 degrees and feet flat on the floor. Stage 1 involved subjects touching their knees with their finger tips (arms straight). Stage 2 required subjects duplicating stage 1, however this time flexing at the trunk enough so that their elbows touched their knees (with arms still straight). Stage 3 required the subject to flex at the trunk to a vertical position with arms crossed over their abdomen. Stage 4 required subjects to flex at the trunk to a vertical position with their arms crossed and hands on their shoulders. Stage 5 required subjects to flex at the trunk to a vertical position with both hands either side of their head. Feet must remain flat on the floor at all times. Results were rated as follows: Stage 1 - Poor, Stage 2 - Below average, Stage 3 - Average, Stage 4 - Above average, and Stage 5 - Very good.

*Lung function* was measured by three tests using an Alpha 3000 dry spirometer. The three tests were Forced Vital Capacity (FVC), Vital Capacity (VC) and Forced Expiratory Volume in one second (FEV1%). Tests were conducted to determine if inspiration and expiration were limited by either obstruction in the airways or restriction of the lung or chest wall. Lung function testing may support or exclude a diagnosis, but cannot make one (Garbe and Chapman, 1988). In light of this, any abnormalities detected were explained to the subject and it was suggested they consult their medical practitioner if deemed appropriate. The unit was calibrated by pumping 10 litres of air through the flow head. If the error between pumped and measured air was greater than 3 per cent, the unit was re-calibrated. If the ambient temperature varied by more than 2 degrees celsius, the unit was again calibrated.

*Blood pressure* was measured before and after the cycle ergometer test. If blood pressure exceeded systole 140 mm Hg or diastole 90 mm Hg, subjects were not permitted to perform the cycle ergometer test and were referred for medical attention accordingly (Appendix G {3}). The protocol used was the same as previously detailed (National Heart Foundation, 1987), however subjects were seated when the measurement was taken.

*Aerobic capacity ( $VO_2$  max)* was measured using the Physical Work Capacity (PWC) test protocol of Sjostrand (1947) on a Monark Ergomedic 818 cycle ergometer. The ergometer was braked mechanically by a belt running around the rim of a flywheel. The braking power (kiloponds {kp}) was set by adjusting the belt tension. The brake tension was multiplied by the distance pedalled (in meters) to determine the amount of work performed in kilopond metres (kpm). If the distance is expressed per minute, then the power in kpm per minute (kpm.min<sup>-1</sup>) is obtained. Free weights suspended from the belt were used to calibrate the ergometer daily.

Subjects were required to ride for approximately nine minutes (at three different workloads) with an additional three minutes to measure recovery heart rate each minute. Heart rate and function was monitored using a Tritex DM2 three-lead electrocardiogram (ECG) placed on the chest in the CM5 configuration. A Tritex CR2 thermal printer was used to obtain a hard copy of the ECG oscilloscope reading. Any abnormalities detected were referred to the Police Medical Officer for advice.<sup>(1)</sup> A linear regression equation was utilised to predict  $VO_2$  max.

Subjects were required to complete the Consent form (Appendix C {4}), Health and Fitness survey (Appendix C {1}), and the Personal History sheet (Appendix C {3}) before undergoing the PWC test. The bike seat height was adjusted so that the leg was almost completely stretched when the pedal was in its lowest position, giving the greatest mechanical efficiency (Astrand and Rodahl, 1986). Resting heart rate was recorded.

The test was started at 300 kpm.min<sup>-1</sup> for males and 150 kpm.min<sup>-1</sup> for females as recommended by the Sjostrand (1947) workload progression charts which were used as a guide to determine workload based on the subject's heart rate. Cadence was maintained at 50 revolutions per minute (RPM). Heart rate was recorded every minute between 50 and 60 seconds by obtaining an ECG trace. The distance between the QRS spikes was measured to determine heart rate rather than relying on the less accurate digital display. When a steady state heart rate (plus or minus 5 beats per minute [bpm] of the last recorded heart rate) was achieved during the initial workload, power was increased as recommended by the work progression chart. The subject's desirable maximal heart rate for the test in a non-medically supervised environment was determined by use of the formula 220 bpm - Subject's age. A further 30 bpm was then subtracted as recommended by Carlson, (1989, pers. comm., August 2nd). The appropriate workload to elicit a heart rate less than the calculated maximum was determined at the end of the second workload (usually after six minutes), providing the subject had achieved a steady-state heart rate. This was achieved by plotting the line of best fit and extrapolating the line to the predicted maximum (i.e. 220 - Age - 30 bpm). To determine  $VO_2$  max however, the standard prediction equation to determine maximal heart rate was used (i.e. 220 - Age).

After the subject had achieved steady-state on the third workload, the power was reduced to 300 kpm.min<sup>-1</sup> (cadence still at 50 RPM) and the recovery heart rates recorded for minutes 1, 2 and 3.  $VO_2$  max was calculated by linear regression ( $Y = a + bx$ ) programmed into a Tandy Pocket Scientific programmable Computer PC-6 calculator. A TRS - 80 Pocket Computer Thermal Printer was used to print results.

*Discussion and counselling* occurred on completion of the Fitness Assessment, where their individual results were recorded in the Fitness Assessment booklet (Appendix C {7}) and

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<sup>1</sup> *Subjects were advised that testing personnel were not qualified to clinically interpret the ECG trace and therefore could not make a diagnosis or give any type of medical clearance.*

then discussed with the subject. The booklet provided a detailed explanation of the tests and results obtained. Appropriate health and fitness related literature was also usually given to the subject.

## **"Operation Physicop" Newsletter**

*Regular newsletters containing items of interest and future activities and events were sent to each police officer in the pilot district throughout the programme.*

The newsletter served as a forum for communicating information about the programme, health issues and results of activities conducted; maintaining a communication link with police officers; generating and maintain interest and enthusiasm in the programme; and providing an educational focus.

The newsletters presented information to create interest in the study. This information was presented using graphics and pictures to enhance "readability" (Appendix H). Different coloured paper was used for each newsletter to make it eye-catching and easily identifiable. A Physical Health Unit publication entitled "Health, Fitness and Recreation" (which is a quarterly magazine distributed state wide) was also promoted in the district. This publication contained articles on specific health and lifestyle topics which helped to reinforce positive lifestyle changes and promoted further interest in health issues.

## **WorkCare Considerations**

Prior to any activities being conducted, the Assistant Commissioner for Personnel approved WorkCare cover for officers participating in study activities.

## **Activities**

*The major component of the study was providing health education and lifestyle awareness through a wide range of activities which focused on improving the health and fitness of participating police officers.*

The aims of the health education and lifestyle awareness programme were to motivate officers to develop goals pertinent to health and fitness; enhance their knowledge and skills related to maintaining their own health and fitness; help maintain interest in working towards those goals; make resources and activities relating to health and fitness readily available; alter the norms of acceptable behaviour (i.e. poor dietary habits); teach the concept of self-responsibility for individual health; and alter the workplace in a positive way which would be conducive to health-enhancing behaviour.

These activities began immediately after the completion of Fitness Assessments. Activities included fruit promotion, Healthy Barbecues, Healthy Breakfasts, local health and fitness facilities promotion, physical and recreational activity days, the Jump Rope For Heart programme, stress management and smoking cessation seminars, and the establishment of exercise circuits at participating stations.

### **Fruit Promotion**

*Large baskets and a supply of fresh fruit were purchased and along with posters on nutrition and other information, were delivered on a one-off-basis to each workplace during the course of the programme.*

The aims of the fruit promotion were to increase awareness of fruit as an important part of a healthy diet and a good "fast food"; and enhance the profile of the study in the workplace through increased contact with police officers.

Each station was visited enabling the delivery of fruit in brightly coloured fruit baskets. Relevant posters from the Australian Nutrition Foundation such as the Healthy Diet Pyramid and Healthy Weight Range, as well as posters from the National Heart Foundation were placed around the walls of stations at this time.

Station visits were timed to coincide with the change of shift (3.00 pm) when a greater than usual number of officers were present. The approach varied depending on station size (they ranged from two to approximately 80 officers) and each stations' operational requirements. Social clubs and Officers in Charge were lobbied to encourage the purchase of fruit and healthier "fast foods" for station fridges and freezers.

### **Healthy Barbecues**

*Healthy Barbecues featuring lean meat and nutritious salads were conducted at police stations. A total of nine barbecues were held, with 135 officers attending in total.*

The aim of the Healthy Barbecues was to increase knowledge about nutrition by presenting simple healthy foods which could be introduced to the diet. Healthy Barbecues were advertised in the "Operation Physicop" newsletter. After a request was received, a date for the barbecues was arranged and a few days before, final figures on anticipated number of participants was calculated. Once this was known, lean meat, salads, fruit and vegetables were purchased locally. Some food was also purchased from the Police Academy kitchen. All stations requesting barbecues had adequate facilities on-site.

Nutritional displays were developed in conjunction with the Video Production Unit at the Police Academy, and included information on dietary fats, facts and fallacies about nutrition, fibre, reading the labels on products, recipes, and a comparison of weight loss

diets. A one metre high, 3-dimensional "Healthy Diet Pyramid" was displayed from the Victorian Health Department. The videos "Healthy Heart Diet" and "The Healthy Pyramid Model: Making Good Nutritional Choices" from the Australian Nutrition Foundation were shown during the barbecues. The cost was three dollars per head.

Promotional material and product samples were supplied by Ideal Dairies (low fat dairy products and soya milk), the Australian Meat and Livestock Industry, the National Heart Foundation, the Australian Nutrition Foundation, the Victorian Dairy Industries Authority and the Bread Research Institute. The barbecue menu consisted of recipes from the National Heart Foundation Cookbook "Guide to Healthy Eating" (1988), and a booklet entitled "Planning Fat Controlled Meals" (1988), which was also available for purchase together with other material.

### **Healthy Breakfasts**

*Healthy Breakfasts which included wholegrain cereals, oatbran muffins, fruit, yoghurt and toast were held at five police stations, with 97 officers attending.*

The aims of the Healthy Breakfasts were to reinforce sound nutritional practices, to promote the importance of eating breakfast, and to promote the development of regular eating patterns. As with barbecues, breakfasts were advertised in the "Operation Physicop" newsletter and held at police stations where requested. When a breakfast was requested, the number of anticipated participants was ascertained and supplies of food purchased. The importance of a high fibre, low fat breakfast was highlighted during the breakfast and information on nutrition was made available. Breakfasts were scheduled between 6.30 am and 7.00 am to take advantage of the shift change at 7.00 am and were free of charge. The "Uncle Toby's" Marketing Department provided promotional material on breakfast cereals and supplied sample packets of products. The breakfast menu consisted of a selection of cereals; low fat yoghurt; stewed apples and fresh fruit salad; grilled or toasted sandwiches - tomatoes, mushrooms, asparagus, corn kernels on multigrain or wholemeal bread; low fat cottage cheese with garden salad; "Rev" and "Skinny Milk"; orange juice; and decaffeinated coffee, herbal and normal teas.

### **Exercise Promotion**

*A variety of activities were held at various times in the district. These were two golf days; an indoor cricket competition, tennis, ten-pin bowling, a Jump Rope For Heart Skip-a-thon and an exercise circuit promotion. A total of 83 officers participated. A sport and recreation facility analysis within "Y" District also took place.*

The aims of the exercise promotion were to encourage participation in regular physical activity; the benefits of regular exercise and recreation pursuits; the simplicity of exercising at home or work; the value of group exercise for cohesion and peer support; the possible improvement in workplace morale through exercise; and the local health and fitness facilities available in the district.

The choice of scheduled activities was influenced by responses to the Health and Fitness Survey. Activities organised included golf, ten-pin bowling, indoor cricket and tennis. Where activities were organised, those members who had expressed interest were invited to participate. A Jump-Off Day was also held as part of the National Heart Foundation's heart disease awareness campaign.

Station based exercise circuits, requiring little or no equipment were developed specifically to meet the needs of police officers. As with the other activities, this aspect of the study was advertised in the "Operation Physicop" newsletter and five stations responded. The exercise circuits were launched at each participating station by attending and demonstrating each circuit. A copy of the circuit was typed and prepared for each station and placed strategically on notice boards. The annual Police Games beginning on the 24th February, 1990 were also advertised heavily within the district to try and increase the participation of officers from "Y" District.

### **"Y" District Facilities**

*A booklet was produced containing information on the location, facilities, prices and discounts or special offers of all "Y" District sports and recreational facilities. This booklet was circulated to all stations in "Y" District.*

Each facility was individually visited and assessed in terms of equipment, classes conducted, and special offers available. As a result of these visits, virtually all the facilities offered introductory and complimentary visits to officers. The details of activities and special offers were written in the booklet.

### **Activity Days**

*Five activities were organised to reinforce programme messages in relation to sport, recreation and physical activity.*

The aims of the activity days were to encourage participation in physical activity; enhance group cohesion; highlight the benefits of a change or break in the work routine; increase station morale; and to encourage interaction between stations.

Each activity required individual planning, which included visiting locations near the pilot district, programming the day's events, compiling and circulating game rules and procedures, pricing events, providing suitable healthy refreshments and finally advertising and promotion.

An "Activity Days" poster was designed and placed in each workplace mess room or strategically located on the notice board. An "Expressions of Interest" sheet was posted where interested officers could sign up. These sheets were then referred to before each activity and officers who had expressed interest were contacted to confirm attendance. Families were also encouraged to attend in order to promote interest in health and fitness at home.

Participating officers were required to pay for activity days and costs were calculated to cover the hire of facilities, lunch and any trophies or prizes awarded. Different healthy lunches were served each day. Low fat snacks after each activity were also available and encouraged. Mineral waters and juices were served as refreshments.

### **Jump Rope for Heart**

*The Jump Rope For Heart Programme was organised to encourage physical activity, and in particular demonstrate the benefits of skipping in terms of equipment, space and low cost.*

During Heart Week (May 2nd-9th, 1990), "Operation Physicop" took part in the National Heart Foundation's Jump Rope for Heart programme. A Jump-Off day was held on May 4th at five locations within the district. Individuals in teams of four alternated to jump rope continuously for one hour.

The Jump Rope for Heart resource kit was obtained from the National Heart Foundation. This contained skipping ropes, a pair of double dutch ropes, a skills booklet and posters. The programme was advertised in the "Operation Physicop" newsletter and through visits to most stations, where a skipping rope was provided to stimulate interest.

As an added incentive to participate, each team was offered a basketball and ring for their station. The National Heart Foundation also offered t-shirts as prizes to teams which raised large amounts of sponsorship.

Additional promotion of the Jump-Off day occurred at the Police Association Picnic held on 11th February, 1990. An information display on "Operation Physicop" was set up at the picnic to increase exposure of the programme and the Jump Rope for Heart Programme. A Jump Rope For Heart skipping demonstration team from the Mentone Girls Grammar School performed at the picnic and after the display, parents and children were encouraged to participate.

As a result of these promotional activities, five teams were formed. Jumpers organised their own sponsors and funds were donated to the National Heart Foundation. Jump-Off day for Victoria was Friday 4th May, 1990 and this date was selected as the Police Jump-Off day. Four stations were selected for the Jump-Off day. Various activities were conducted and prizes such as frisbees, tennis sets, nutrition books, high fibre cereals and skipping ropes were awarded.

### **Exercise Circuit**

*An exercise circuit was designed for each station and posters displaying the various exercises were placed around the walls. Each poster represented a different exercise station. Music was played to add interest to the exercise sessions.*

The aims of the exercise circuit were to educate officers about the effective use of simple exercises with or without the use of resistance equipment; increase physical fitness; show that exercises such as an exercise circuit can easily be done at home or at work; and encourage proper warm up and cool down procedures when exercising.

This promotion occurred at police stations that either had small resistance training areas, were contemplating establishing an area for this purpose, or who had sufficient space for such an activity. Monbulk, Ringwood, Mooroolbark and Nunawading Police Stations participated in this promotion.

A circuit of exercises using very little equipment was developed. A warm up stretching chart and pictures of each exercise were produced. Participants exercised to music for 40 seconds followed by a 10 second break to enable exercise change. The circuit was explained and demonstrated at each station to ensure understanding of the full benefits of the activity.

### **Indoor Cricket**

*Cricket was scheduled for the Surrey Park Number 3 Oval, however heavy rain caused the venue to moved to an indoor cricket venue in Ringwood. Three teams entered with a total of 28 participants.*

A "knock-out" competition was organised whereby each team played at least three games each. A Healthy Barbecue was also prepared for lunch. The cost for the day was four dollars per head.

### **Golf**

*The Golf Day was held at Croydon, with 14 officers participating.*

Due to the problems associated with handicapping, the golf day was based on the Calloway system, thereby allowing participants of varying standards to participate equally.<sup>(2)</sup> Healthy snacks were provided during presentation of trophies and awards. The cost was ten dollars per head.

## Tennis

*The tennis day was held at the Croydon Leisure Centre, with 19 officers participating.*

A doubles round-robin competition was organised with each game lasting 20 minutes only. A light lunch was provided including sandwiches, fruit and fruit juice. Prizes and awards were purchased. The cost for the day was five dollars per head.

## Seminars

### Stop Smoking Seminar

*The Stop Smoking Seminars were organised in response to the Health and Fitness Survey results, which showed that 104 members in the district smoked, with 43 indicating a desire to quit. An assortment of literature was available, as well as equipment to test the physiological effects of cigarette smoking on the body. A total of 16 participated in the two seminars.*

The aims of the Stop Smoking Seminars were to highlight the detrimental health effects of cigarette smoking; provide information about different methods available to help participants quit smoking; offer support and encouragement to those contemplating quitting; encourage a change in attitudes to smoking and ultimately motivate the individual to quit; and reinforce the smoking ban in police vehicles and buildings.

Two seminars were conducted to assist officers to quit smoking. Guest lecturers were invited to speak at each seminar. Promotion of these seminars included personal letters to all smoking police officers (Appendix I {1}), all Officers in Charge (Appendix I {2}), information in the "Operation Physicop" newsletter, Collator's Sheets,<sup>(3)</sup> as well as verbal information and distribution of "No Smoking" stickers. Posters containing smoking seminar details were prominently displayed at stations. The seminars were developed in conjunction with the Police Psychology Unit.

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<sup>2</sup> Calloway is a system where scores are calculated based on a standard formula, and the system allows people of all abilities to compete equally.

<sup>3</sup> A collator is a person who collates information from within a police district regarding criminal offences and other relevant information, and then produces a regular bulletin for the benefit of police working in that district.

The first seminar was held on Thursday, 19th April 1990, between 10.30 am and 1.00 pm at the Police Academy. A second seminar was held on Wednesday, 10th October 1990, between 10 am and 12 noon at the Knox State Emergency Service Office. As a result of the interest generated by these seminars, two other seminars were requested in another district and were subsequently run.

The seminars in "Y" District included facts relating to the effects of smoking and related diseases; a guide to giving up; alternative programmes such as hypnotherapy, acupuncture, and nicotine chewing gum; and guest speakers from the Adventist Health Department and the Warburton Health Centre speaking on their commercial quit programmes. The videos presented were *It's Only One Cigarette* from the Anti-Cancer Council of Victoria, and *Confessions of a Simple Surgeon* produced by the New South Wales Health Department.

Displays from the Anti-Cancer Council and the Quit Campaign were also set up. International "No Smoking" signs (a cigarette within a red circle), both large and small for police vehicles and station mess rooms, were distributed to all stations to reinforce the ban on cigarette smoking. The second seminar also featured a kit specifically designed to test the physiological effects of smoking on the body from the Anti-Cancer Council of Victoria. This kit contained a device to test hand steadiness (before and after smoking a cigarette), and a carbon monoxide analyser to test samples of exhaled air from smokers.

A survey was developed which asked participants basic information about their smoking habits and also asked for feedback on the seminar, and ways it could be improved. Fresh fruit and fruit juice were provided because of their appropriateness to a stop smoking programme (as opposed to coffee which smokers often associate with a cigarette).

### **Stress Management Seminar**

*The Health and Fitness Survey indicated a number of officers were interested in stress. One stress management seminar was organised and run in conjunction with the Police Psychology Unit. A total of 13 officers participated in the seminar.*

The aims of the stress management seminar were to increase awareness and knowledge regarding the causes of stress and to introduce practical coping strategies. The seminar was held on Wednesday 14th March, 1990 at the Maroondah Social Health Care Centre, Patterson Street, Ringwood in conjunction with the Police Psychology Unit. Personal letters were sent to all officers who had indicated an interest and promotional posters were also displayed at all stations within the district.

The seminar included information on positive and negative stress, categories of stress and burnout, Rational Emotive Therapy, physical exercise and stress, nutrition and relaxation. Seminar participants were introduced to relaxation techniques. One of these techniques involved participants lying on the floor and contracting and relaxing different muscle groups sequentially. Another involved participants visualising a peaceful and soothing

scene detailed to them by the presenter. Refreshments provided, reflecting current knowledge in relation to stress management, included herbal tea and decaffeinated coffee.

## **Risk Screening Clinic and Fitness Assessment Retesting - 1990**

*Participants were notified of the Risk Screening Clinic and Fitness Assessment retesting by personal letter, posters, information through Officers in Charge, and notification in the "Operation Physicop" newsletter. Participants were also telephoned to encourage attendance. A total of 145 (from the 362 who attended in 1989), were re-tested by the Mobile Risk Screening Clinic. A total of 110 (from the 207 who attended in 1989) re-attended the Fitness Assessment.*

Retesting in the district was aimed at determining changes that may have occurred in the health and fitness status of police officers as a result of the programme; determining the effectiveness of the programme from the participants' viewpoint through an Evaluation Survey; identifying which parts of the programme were most successful; and re-motivating officers by evaluating their progress since initial testing.

A letter was sent to all officers who had participated in 1989. Risk Screening Clinic retesting involved use of the Mobile Risk Screening Clinic van which visited stations in "Y" District. Officers were tested on the same equipment using the same procedures as those adopted in 1989.

Fitness Assessments in 1990 took place at three police stations - Nunawading, Ferntree Gully and Lilydale. The tests conducted at these locations were identical to those conducted in 1989. Members were also asked to complete the same surveys they had in 1989. One additional survey which was completed however was the Evaluation Survey (Appendix C {6}).

A one page sheet was made up which had results obtained in 1989 listed with a space for 1990 results next to the initial result (Appendix J). This enhanced the counselling session because physical health changes could immediately be determined between the two tests.

## **Comparisons and Statistical Analysis**

*The "Operation Physicop" programme, through voluntary participation, intended to measure changes in health and fitness parameters as a result of interventions aimed at influencing positive health and fitness factors.*

A self-selecting, voluntarily participating group of police officers were measured on the same range of health and fitness variables before and after exposure to the programme. WorkCare and sick leave comparisons were made with other personnel throughout the state.

Descriptive statistics were used to obtain a comprehensive profile of the district population. Two Multi-factor Analysis of Variance (MANOVA) tests were undertaken on comparison data. One test was conducted on Risk Screening Clinic data and one on Fitness Assessment data. Separate MANOVA's were performed because of the differing variable numbers in each analyses. Planned comparisons were utilised to determine whether specific differences of interest existed. Post-hoc multiple t-tests were used for comparisons of interest and are reported at the .05 level of significance.

Collected data was stored in the Victoria Police Hospital computer database. In order to add Fitness Assessment and survey data to the database, it was necessary to attend the Police Hospital. Ad hoc inquiries of the database involved either attending or telephoning the Hospital for the inquiry to be carried out by staff at the Police Hospital. A discussion of the problems associated with data management is presented in Chapter 5. Production of descriptive and post-hoc statistics was achieved by use of the statistics package SPSS-PC. The MANOVA statistical analysis took place at Monash University using the statistical package SYSTAT. The sick leave/WorkCare data extraction occurred at the Research and Development Department and was also analysed using the SYSTAT programme.

# **Chapter 4**

## **Results**

## Chapter Summary

### Results

*The comparison group comprised police officers who attended the Risk Screening Clinic and the Fitness Assessment in 1989 and 1990. Statistical comparisons undertaken on the 145 officers who were retested by the Risk Screening Clinic and the 110 officers who had a second Fitness Assessment were distinctly "better" than they had been in 1989 on a range of health and fitness measures.*

*Generally, it was found that the officers were eating better, feeling fitter and exercising more after the programme. Body weight, Body Mass Index, cigarette smoking and alcohol consumption decreased significantly, while dietary habits and exercise levels improved significantly.*

*Interesting changes occurred in participants' attitudes towards exercising and officers generally reported feeling fitter after the programme. Percentage body fat decreased significantly during the programme and abdominal strength and grip strength increased significantly. Systolic and diastolic blood pressure decreased significantly.*

*Sick leave/WorkCare in "Y" District for 1989/90 compared to the rest of the state decreased by 1.1 days per officer per year, equating to a minimum saving of 501 days, or \$44,416. Neuropsychological disorders increased by 34%, while the incidence of infections, gastroenteritis, and "other" injuries decreased by 27.4%, 32%, and 182% respectively.*

*A total of 135 officers attended the Healthy Barbecues and 97 officers attended the Healthy Breakfasts. These activities were very well received by officers. Activity days involved a total of 72 officers, representing 16% of the district. Ten teams entered the Jump Rope For Heart Jump Off, and \$2,266.50 was raised. Two stop smoking seminars and one stress management seminar were held, attracting 16 and 15 participants respectively with responses generally very positive.*

*The Evaluation Survey (of participants and non-participants with 262 being returned) showed 85.4% reported the study had improved morale at their station, while 67.6% said they thought the study had improved their work performance. As a result of the study, 95.2% reported being more aware of health and fitness issues, 93% took more care of themselves, 87.1% changed their diet for the better, 87% exercised more regularly, 70.7% lost weight, 86.2% improved their well-being, and 78.7% improved their self-image. Of the respondents, 90% said the study was worthwhile and thought that it should be extended statewide.*

## Chapter 4 Results

### Description

The primary purpose of this study was to identify and document its effects on the health and fitness status of the target population. This chapter presents the results of the programme, and comprises a brief discussion of the groups and sample sizes, followed by an explanation of the risk factors reported. Following this there is an explanation of the results of the overall analysis of variance undertaken. The final section of this chapter presents an overview of the findings of the Evaluation Survey.

A total of 145 officers re-attended the Risk Screening Clinic, and 110 re-attended the Fitness Assessment. The following Group data are reported:

- Group 1**      The group of "Y" District officers (n=145) who returned to be tested in 1990 by the Mobile Risk Screening Clinic.
- Group 2**      The group of "Y" District officers who attended the Fitness Assessment in 1989 and again in 1990 (n=110).

### General Comments About Results

When results are reported as "significant", t-tests have been conducted and the result is *statistically significant* at the .05 level. When *changes* in the data are reported, it should be assumed that the changes refer to measurements made pre and post-treatment (i.e. 1989 to 1990), referred to as T1 (Test 1) and T2 (Test 2).

The results of the Evaluation Survey component conducted throughout the District at the completion of the study, while not directly contributing to the measurement of a change in health and fitness parameters, does nonetheless help determine the overall effectiveness of the study within the district. These results are also important to the future design and administration of studies of this nature.

### Groups and Sample Sizes

At the commencement of the study, it was determined that 457 officers (87% male) were working in "Y" District. All available officers were encouraged to attend the Risk Screening Clinic, and by the end of 1989, 362 officers or 79.2% had attended. While this was occurring, Fitness Assessments were also being undertaken, and once again, all officers were encouraged to participate. Ultimately, 207 officers (or 57.2% of the sample) were assessed.

In 1990, officers were encouraged to have a second Risk Screening Clinic assessment, resulting in 145 officers (40.1%) being tested. Unfortunately, blood lipids (cholesterol and triglycerides) cannot be reported for this group owing to testing errors associated with the Mobile Risk Screening Clinic (except for nine officers who attended the Police Hospital for both tests).<sup>(1)</sup> These nine officers had been classified as high risk,<sup>(2)</sup> and therefore their lipid data will be reported. However, their results need to be considered in the light of the small sample size, their classification as high risk and the subsequent advice they were given.

### Attrition

An important factor having an impact on sample sizes during this study was the rate of attrition through transfer and retirement. A total of 89 "Y" District officers (19.5%) were lost during the study in this way. Combined with the fact that the personnel list obtained prior to testing (discussed in greater detail in Chapter 5), which it was eventually determined did not accurately reflect the *actual* personnel working within the pilot district, considerably reduced the number of accessible officers during testing and during the study in general. These are unavoidable factors of research set in real life situations and proved to be a considerable drain on the sample size.

### Analysis of Variance on Comparison Groups

Two Multi-factor Analysis of Variance (MANOVA) tests were conducted to determine if there had been an overall treatment effect. A MANOVA (Hotellings t-test) was conducted on the Risk Screening Clinic data (Group 1) and on the Fitness Assessment data (Group 2). Two analyses were done because of the different nature of the variables and their different sample sizes. The overall analysis on the Risk Screening Clinic pre and post-treatment data gave a  $F_{18,127}$  value (an S statistic calculated from Wilke's Lambda) of 8.37 which is significant at the .01 level. The overall analysis of the Fitness Assessment pre and

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<sup>1</sup> For the first Risk Screening Clinic test, all officers tested in the district had attended the Victoria Police Hospital. For the second Risk Screening Clinic, the overwhelming majority were tested by the Mobile Clinic at various sites throughout the district. Unfortunately, an error occurred in the machine used to analyse blood lipids and inadequate procedures prevented the error being detected. The procedures adopted by the Risk Screening Clinic staff were ones they had previously been advised to follow. The error was detected by observing that some results obtained when considered with other data appeared to be too high. Because of this, enquires were made and the procedural inadequacy was discovered. Although in all probability a majority of the results would be accurate suggesting that a method of excluding outliers might be employed, the uncertainty of all the results prevents them being utilised for analysis.

<sup>2</sup> If officers were found to be high risk (i.e. cholesterol  $\geq 6.5$  mmol/L or triglycerides  $\geq 3.0$  mmol/L), they received group counselling by a dietitian and were strongly encouraged to return to the Risk Screening Clinic after a three month period. If systolic blood pressure  $\geq 140$  mm Hg or diastolic  $\geq 90$  mm Hg, officers were re-tested within a few days, and if still elevated were advised to attend their Doctor.

post-treatment data gave a  $F_{16,67}$  value of 4.32, which was also significant at the .01 level. Planned comparisons were then undertaken to determine where those differences lay.

## Primary Research Hypotheses

Several null hypotheses were postulated to be tested at the .05 level of significance. The measurements of cholesterol, triglycerides and spirometry have been excluded from analyses due to the measurement errors previously discussed. Based on the results obtained, *several of the null hypotheses contained within the five broad categories were rejected* at the .05 level of significance. Significant differences were recorded in hypotheses; (1) Risk Screening Clinic, (2) Fitness Assessment, (3) Health and Fitness Survey, (4) Sick Leave/WorkCare, and (5) Evaluation Survey.

## Risk Factors

Throughout this section, reference will be made to risk factors. Unless otherwise stated, these are defined as one of the following: (i) Cholesterol  $\geq 5.5$  mmol/L; (ii) Systolic blood pressure  $\geq 140$  mm Hg or diastolic blood pressure  $\geq 95$  mm Hg; and (iii) Cigarette smoking.

## Results Group 1

### Risk Screening Clinic

*This group comprised officers (n=145 with 89% being male) who attended the Risk Screening Clinic in 1989 (T1) and 1990 (T2). The group improved significantly in seven parameters. They were diastolic blood pressure, weight, Body Mass Index (BMI), cigarette smoking, exercise levels, overall diet score and lifestyle score. Several diet measures also changed significantly between T1 and T2. Those dietary measures to decrease included the use of alcohol, meat, eggs, take-away meals, salt and frying food, and an increase in the use of low-fat products.*

The mean age for this group was 35 years, with the mean for males and females being 35.5 years and 30.3 years respectively. There were 129 males and 16 females in the group. In terms of rank, there were 17 constables, 70 senior constables, 35 sergeants, 14 senior sergeants, 7 officers of or above the rank of inspector and 2 reservists.

The overall comparison of the physical measurements made at the Risk Screening Clinic between 1989 and 1990 are in Table 4.1. Detailed results of all Risk Screening Clinic data by the subgroups age and gender are in Appendix K {1-36, p.165}, while overall comparisons for the Risk Screening Clinic Questionnaire are in Table 4.2.

## Weight/Body Mass Index

*Body Mass Index decreased significantly.*

In T1, 69% of the group were classified as overweight (BMI  $\geq 25$  kg/m<sup>2</sup>) compared to 60% in T2. Weight loss in Group 1 was significant with a mean reduction of 1 kg overall (Table 4.1). Those aged between 40-49 years lost the most weight (-1.8 kg), and also demonstrated the highest reductions in mean BMI (-.6 kg/m<sup>2</sup>)(Appendix K {1}, p.165).

	Test 1 mean	Test 1 $\pm$ S.D.	Test 2 mean	Test 2 $\pm$ S.D.	Difference	% Difference
<i>Parameter</i>						
BMI (kg/m <sup>2</sup> )	26.3	3.1	25.9	2.9	-.4	-1.5*
Systolic BP (mm Hg)	123.1	10.4	125.6	10.6	2.5	2.0*
Diastolic BP (mm Hg)	79.3	8.7	77.8	8.4	-1.5	-1.9*
Body weight (kg)	84.8	12.8	83.7	12.3	-1.1	-1.3*
Cholesterol (mmol/L)	5.0	1.1	-	-	-	-
Triglycerides (mmol/L)	1.24	.7	-	-	-	-

\* Significant difference at the  $P < .05$  level.

## Blood Pressure

*Systolic blood pressure increased significantly while diastolic blood pressure decreased significantly.*

Diastolic blood pressure decreased significantly from 79.3 mm Hg to 77.8 mm Hg, while systolic blood pressure increased significantly from 123.1 mm Hg to 125.6 mm Hg. The greatest increase in systolic blood pressure occurred in the 50-59 year age group (+10.2 mm Hg), while the greatest reduction in diastolic blood pressure occurred in the 40-49 year age group (-2.3 mm Hg).

## **Blood Lipids**

*Comparisons of blood lipids are not available due to a testing error.*

Of the group, 37.9% had a cholesterol level above 5.5 mmol/L and 13.1% had a cholesterol level above 6.5 mmol/L in T1. Of the group, 14.5% had a triglyceride level above 2.0 mmol/L. No data are available for T2 blood lipids because of the measurement problems previously discussed.

## **Risk Screening Clinic Questionnaire**

*Participants completed a Questionnaire upon attending the Risk Screening Clinic in T1 and T2.*

The Risk Screening Clinic Self-Assessment Questionnaire (Appendix H {1}), completed by officers as part of the testing, consisted of various questions relating to risk identification and included questions on personal details (registered number and station), cigarette smoking, alcohol use, diabetes, dietary habits, age and exercise levels. Overall mean results from the Risk Screening Clinic questionnaire are shown in Table 4.2. Detailed frequency tables by the subgroups age and gender are at Appendix K {2-36, p.166}.

### **Part A: Cigarette Smoking**

*Cigarette smoking was reduced significantly.*

Smoking for the whole group reduced significantly by 30.3%, from 4.3 to 3.3 cigarettes per officer per day, which includes non-smokers (Appendix K {3-5, p.167}). Smoking rates (for smokers alone) decreased significantly by 37.9% from 18.2 to 13.2 cigarettes per day. This calculation includes smokers who quit in T2. Of the smokers, 8.8% quit from T1 to T2. Those smokers who did not quit between T1 and T2 reduced their cigarette use by 19.7%, from 18.2 to 15.2 per day. In 1989, 58.8% of smokers smoked more than 20 cigarettes per day, compared to 32.3% in 1990. Those aged between 20-29 years decreased their cigarette consumption by 130.4% (5.3 to 2.3 cigarettes per officer). Female officers reduced their smoking rates by 67.9% compared to males 27.3%.

### **Part B: Alcohol Consumption**

*Alcohol consumption was reduced significantly.*

Alcohol consumption overall was reduced significantly by 15.4%. Significant reductions were noted in the age groups 20-29 and 30-39 years (Appendix K {6-8, p.169}). Both

males and females significantly reduced their alcohol consumption. In T1, 65.5% of the group reported being either non-drinkers or low-level drinkers, compared to 75.2% in T2.<sup>(3)</sup> In T1, 41.1% of males reported either having a moderate or high alcohol intake, compared to 26.4% in T2. Of the females, only one (6.3% of the group) reported having a moderate intake (no female reported having a high intake). In T2, two females (12.5% of the group) reported having a moderate intake.

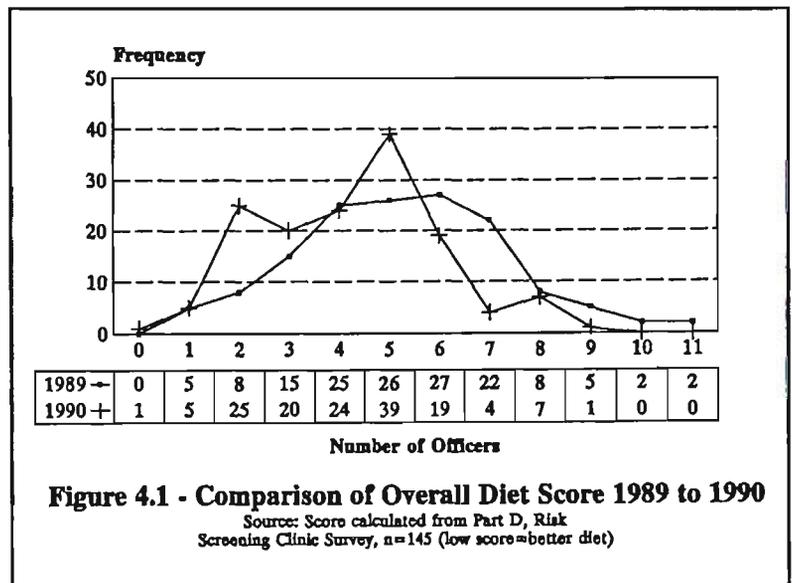
**Part C: Diabetic Status**

*There were no officers who reported being diabetic.*

**Part D: Overall Diet Score**

*The overall diet score was reduced significantly.*

The mean diet score decreased by 26.2%.<sup>(4)</sup> The mean in T1 was 5.3 compared to 4.2 in T2. In T1, 45.5% compared to 21.4% had a diet score of 6 or above, indicating a significant improvement (Figure 4.1). While all decreases in diet score were significant (except the age group 50-59 years), those aged between 30-39 years made the most improvements (-31.7%). Males improved their diet score by 25.6% and females 10.3%, however females initially had lower scores than males (5.4 compared to 4.3) (Appendix K {30-32}, p.180).



**Figure 4.1 - Comparison of Overall Diet Score 1989 to 1990**  
 Source: Score calculated from Part D, Risk Screening Clinic Survey, n=145 (low score=better diet)

**Part D: Dietary Habits**

*There were significant improvements in all dietary habits except eating cakes/biscuits.*

<sup>3</sup> Total alcohol intake was calculated based on the results of two questions relating to alcohol (Part B) on the Risk Screening Clinic Questionnaire. The two results obtained, which will range from 0 to 3 for each question are then added. The average numerical value of the two questions is then assigned the following values: 0 = Non-drinker, 1 = Low alcohol intake, 2 = Moderate alcohol intake, and 3 = High alcohol intake.

<sup>4</sup> The Risk Screening Clinic calculates a diet score by adding the responses given to Part D of the Risk Screening Clinic Questionnaire (questions covering meat, egg, take-away meals, salt, cakes and biscuits, frying food, and use of low-fat dairy products).

**Meat** - The meat consumption score overall was significantly reduced by 14.3%. There was a considerable reduction in the number eating meat more than 7 times per week (37.9% to 19.3%) (Appendix K {9-11}, p.170). Those eating take-away meals 3-4 times per week was reduced by half (26.9% to 12.4%). All age groups, except 50-59 years (where there were only 7 officers) reduced their meat consumption significantly between tests. Males reduced their meat consumption significantly, whereas although females showed considerable change, it was not significant.

**Eggs** - The score for egg consumption was significantly reduced by 50%. The number of officers eating more than 3 eggs per week decreased from 33.1% to 17.9% (Appendix K {12-14}, p.172). Again, while males showed a significant decrease, female police officers did not. Younger police officers (those aged between 20-29 years) were the only age group to significantly reduce egg consumption.

**Take-away meals** - The score for take-away meals was significantly reduced by 16.7%. In T1, 26.9% ate more than three take-away meals per week, compared to 12.4% in T2 (Appendix K {15-17}, p.173). Those aged between 30-39 years showed the most change. Males reduced their consumption of take-away meals significantly, with the number reporting never eating take-away meals or only eating them 1-2 times per week increasing from 71.3% to 86.9%. Females made no significant changes, however, their frequency of eating take-away meals was already comparatively low.

**Salt** - The score for salt was reduced significantly by 20% between tests. In T1, 46.2% used salt compared to 36.6% in T2 (Appendix K {18-20}, p.175). No individual age groups made significant changes. Males reduced their use of salt significantly from 45.7% to 37.2% using salt, compared to the females where 50% were initially using salt, reducing to 31.2%.

**Cakes/Biscuits** - The score for eating cakes or biscuits was not reduced significantly. In T1, 39.3% ate cakes or biscuits daily compared to 35.2% in T2 (Appendix K {21-23}, p.176). No age groups reduced their intake significantly. Similarly, males and females made only minor changes, with males reducing their intake by 5.5% and females by 6.3%.

**Frying food** - The score for frying food was reduced significantly by 10%. Overall, there was a 7.6% increase in the number of officers who never fried their food (Appendix K {24-26}, p.177). No individual age group significantly reduced their frequency of frying food. Males however, did significantly reduce their frequency of frying food, while females did not. Females actually increased their frequency of frying food marginally, increasing their use to similar levels of the males (i.e. 87.5% of females frying food never, or 1-2 times per week, compared to males 85.2%).

**Table 4.2 Comparison of Overall Mean Scores for Risk Screening Clinic Questionnaire 1989 to 1990.**

	Test 1 Mean	Test 1 ± S.D.	Test 2 Mean	Test 2 ± S.D.	Difference	% Difference
<i>Parameter</i>						
Smoking <sup>(a)</sup> (whole group)	4.3	8.8	3.3	7.6	-1.1	-30.3*
Smoking (per smoker)	18.2	8.5	13.2	10.7	-5.0	-37.9*
Alc1 <sup>(b)</sup>	1.3	0.7	1.2	0.7	-0.10	-7.7*
Alc2	1.7	0.9	1.4	0.9	-0.30	-17.6*
Total Alc	1.3	0.7	1.1	0.6	-0.20	-15.4*
Diabetes	0	0	0	0	0.0	0.0
Meat	1.4	0.5	1.2	0.4	-0.20	-14.3*
Eggs	0.4	0.5	0.2	0.4	-0.20	-50.0*
Take-away	1.2	0.8	1.0	0.7	-0.20	-16.7*
Salt	0.5	0.5	0.4	0.5	-0.10	-20.0*
Cakes/biscuits	0.4	0.5	0.4	0.5	0.0	0.0
Fry	1.0	0.6	0.9	0.6	-0.10	-10.0*
Low-fat	0.5	0.5	0.3	0.5	-0.20	-40.0*
Diet score	5.3	2.1	4.2	1.8	-1.1	-26.2*
Exercise	1.6	1.2	1.3	1.2	-0.30	-18.8*
Lifestyle score	12.8	3.8	11.2	3.6	-1.6	-14.3*

(a) Rate per day, including smokers and non-smokers. (b) "Alc1" is a measure of the number of times alcohol is consumed per week. "Alc2" is a measure of the number of drinks usually consumed when the subject does drink. "Total Alc" is the total alcohol intake of the person, and is the mean of the two numerical values assigned to Alc1 and Alc2 (see Questionnaire). \* Significant difference at the  $P < 0.05$  level.

**Low-fat dairy products** - The overall mean score for low-fat dairy products fell by 40% in T2, indicating an increased use of these products. In T2, there were 19.3% more officers

using low-fat dairy products than in T1 (Appendix K {27-29}, p.178). Fifty-one per cent used low-fat dairy products in T1, compared to 70.3% in T2. Those aged between 30-39 years increased their use of low-fat products significantly. Males increased their use significantly from 46.5% to 69% compared to females 69% to 81.2%.

**Lifestyle score**

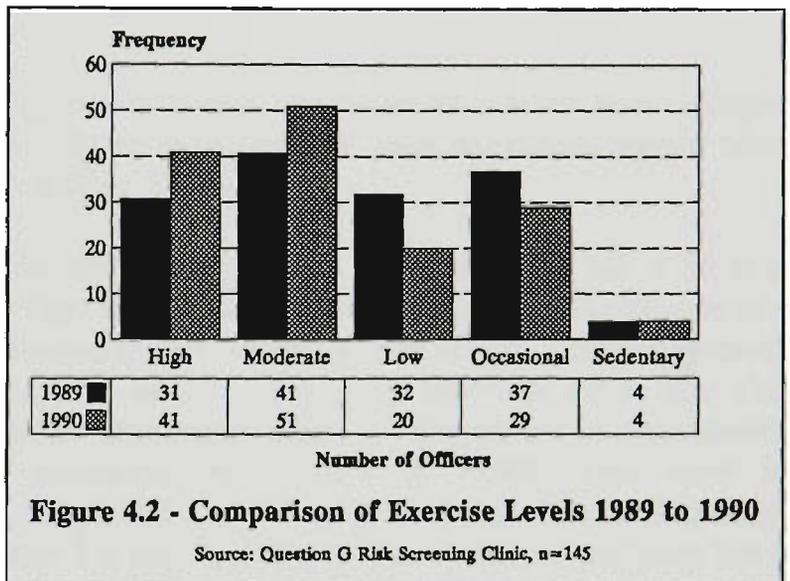
*The lifestyle score was reduced significantly.*

The lifestyle score decreased significantly (indicating an improvement) by 14.3% from 12.8 to 11.2. Male officers improved their lifestyle score marginally more than female officers (14.3% compared to 11.7%) (Appendix K {36}, p.185). Those aged between 30-39 years had the highest lifestyle score in T1 (13.2), and reduced this to 11.6 in T2 (a reduction of 13.8%).<sup>(5)</sup>

**Part G: Physical Exercise Levels**

*Exercise levels increased significantly.*

Overall, physical exercise levels increased by 18.8% (Appendix K {33-35}, p.183). Half the group (49.7%) had moderate to high physical exercise levels in T1 compared to 73.4% in T2 (Figure 4.2).<sup>(6)</sup> Officers aged between 30-39 years improved their exercise levels the least (13%), while those aged 20-29 years showed the most improvement (23.1%). Females officers improved their exercise levels by 28.6% compared to males, 23.1%.



<sup>5</sup> The lifestyle score indicates whether lifestyle habits and behaviours are encouraging and promoting good health. The Baker Medical Institute normative tables indicate that scores between 6-12 for males under 39 years is "average". A score of 13 or over is considered "unfavourable". For females aged less than 45 years, a score between 9-15 is "average". A score of 16 or over is considered "unfavourable".

<sup>6</sup> "High" activity level means respondents vigorously exercised three or more times per week for more than 30 minutes, "moderate" activity level means they moderately exercised two to three times per week, "low" activity level means they were physically active at work but did no regular exercise, "occasional" activity means they were physically inactive at work and exercised occasionally, and "sedentary" means they had a sedentary occupation and did no regular exercise.

## High Risk Personnel

*Nine officers re-attended the Risk Screening Clinic within six months of T1. These officers showed significant reductions in most parameters, particularly cholesterol.*

A small group of officers (n=9) re-attended the Risk Screening Clinic at the Victoria Police Hospital within six months of T1. Because both T1 and T2 were conducted at the Hospital and not by the Mobile Unit, changes in blood lipids are reportable. These officers re-attended the Risk Screening Clinic within six months of their first test, at which time had all been classified as being high-risk. Results are presented cautiously because of the small sample size and the risk status of the officers.

Cholesterol was lowered by .88 mmol/L (or 14.6% x 2), indicating overall a 29.2% decrease in coronary risk.<sup>(7)</sup> Triglycerides increased slightly by .12 mmol/L. Systolic and diastolic blood pressure decreased significantly (131.8 mm Hg to 125.3 mm Hg and 87.1 mm Hg to 79.8 mm Hg respectively). Mean Arterial Pressure also decreased significantly from 102 mm Hg to 95.0 mm Hg.

The officers lost an average of 5.5 kg which was a significant change in body weight, occurring in six months or less. As would be expected with such significant weight loss, BMI decreased significantly from 29 kg/m<sup>2</sup> to 27.3 kg/m<sup>2</sup>.

The number of cigarettes smoked by this group also reduced from a mean of 3.3 in T1 to a mean of 1.1 in T2, although this finding was not statistically significant. Exercise levels increased slightly, but also not significantly. The dietary habits of this group improved significantly with a mean diet score of 4.6 at T1 reducing by 130% to 2.0 in T2. The officers' Overall Coronary Risk percentile (calculated based on the results of cholesterol, blood pressure, smoking and age) decreased from 66.3% to 39.4%. This score is interpreted that in T1 this group as a whole had a 16.3% greater chance of suffering heart disease than the "average" person. After T2, they had 10.6% less chance of suffering heart disease than the "average" person.

## Group 2

### Health and Fitness Survey

*The Health and Fitness Survey was comprised of questions on smoking, stress, sleeping patterns, level of satisfaction at work, perceived fitness level, preferred times to exercise, current and desired sporting and recreation activities, and other lifestyle questions (Appendix C {1}).*

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<sup>7</sup> It is widely accepted that for every 1% reduction in plasma cholesterol there is a 2% reduction in coronary risk (Multiple Risk Factor Intervention Trial Research Group, 1982).

*After the programme, officers reported feeling fitter, large changes occurred in preference for exercise locations, they were prepared to pay less money for formally arranged activities, and over three-quarters of respondents said that having access to facilities at work would make them exercise more frequently. Lack of time was the most important factor preventing more regular exercise, while 97% said they would participate in activities if they were held at work.*

During the testing period, officers completed the Health and Fitness Survey immediately prior to their Fitness Assessment. Although 110 officers attended a second Fitness Assessment (and form Group 2), 99 surveys were actually completed. A lack of time on the officer's behalf was the most common factor precluding completion of the survey. All responses not displayed in table format within this section, are displayed at Appendix L {1-14}, p.186).

### **Smoking**

*There were no significant changes in the reasons for giving up smoking.*

Officers were asked the reason(s) for giving up smoking (if applicable). In T1, 33 officers responded to this question, indicating approximately 33% were ex-smokers (Appendix L{1}, p.186). Of the 33 respondents, 21 officers (66.3%) said they had given up smoking because of concern for future health. In T2, 70% gave concern for future health as a reason for quitting smoking. There was a decrease in the number who said they gave up because of the cost (27.3% to 20%). There were three less officers interested in stop smoking programmes in T2 compared to T1, indicating a reduction of 16.7%.

### **Perceptions of Health**

*There were no significant changes in responses to Questions 3-9.*

Mean responses for Questions 3-9 are in Table 4.3. Respondents were required to place a mark along a line which was 100 mm in length. Each line had a descriptive term placed at each end. For example, question three asked, "How would you describe your health?". At the extreme left hand side of the line was the statement, "Not very good", while at the extreme right was the statement "Very good". The closer the mark was placed to either descriptive term, indicated the respondent's strength of agreement or disagreement.

No significant changes were observed in any of the responses in this section, however some of the results will be reported. Officers described their health as being slightly worse after the programme (-4.7%) (Question 3, Table 4.3). The level of stress officers felt at work decreased slightly after the programme, from a mean response of 50.8 mm to 48.8 mm (Question 7). The stress officers felt at home on the other hand, increased by 14.2% (or 4.2 mm on the 100 mm scale) (Question 8).

	T1 (S.D.) <sup>(a)</sup>	T2 (S.D.)	Difference	% Difference
<i>Question</i>				
3 <sup>(b)</sup>	70.6 (19.4)	67.3 (18.3)	-3.3	4.7
4	73.9 (24.0)	72.3 (23.4)	-1.6	2.2
5	34.3 (20.4)	35.6 (19.8)	1.3	3.6
6	39.8 (19.5)	40.2 (21.1)	.4	1.0
7	50.8 (25.6)	48.8 (23.6)	-2.0	3.9
8	29.5 (24.4)	33.7 (22.0)	4.2	14.2
9	66.4 (23.1)	64.6 (22.2)	-1.8	2.7

(a) Respondents were required to indicate on a line 100 mm in length either agreement or disagreement with the statement.

(b)

Q.3 How would you describe your health? (zero="Not very good")

Q.4 How well did you sleep last night? (zero="Very poorly")

Q.5 How easily do you lose your temper these days? (zero="Not at all")

Q.6 How impatient are you these days? (zero="Not at all")

Q.7 How would you rate the level of stress at work? (zero="Low")

Q.8 How would you rate the level of stress at home? (zero="Low")

Q.9 How satisfied are you at work? (zero="Not at all")

### Child-Care

*There were no significant changes in marital status or children.*

There were no significant changes in marital status or in the number of officers who had children (Appendix L {3 and 4}, p.187). The number of officers experiencing difficulty finding child-care increased from 9 to 16 which represents a 77.8% increase.

### Shift Work

*There were no significant changes in shift working patterns.*

The number of officers working shift work decreased slightly. In T1, 87.8% compared to 85.9% in T2 worked shift work (Appendix L {5}, p.188). The actual amount of overtime worked per fortnight however, increased considerably (40.4%) from 4.2 to 5.9 hours. The number of hours overtime *usually* worked per fortnight decreased from 5.0 to 4.5 hours. The number of spouses working also increased by 12.9% (62 to 70) (Appendix L {5}).

### Wholegrain Cereals and Fruit

*There were no significant changes in reported consumption of cereals or fruit.*

There was a 5% increase in the number of officers who said they ate wholegrain cereals on a daily basis, and an 8% increase in the number who said they ate wholegrain bread 4 to 6 times per week. The number of officers eating unprocessed bran increased by 4%. Approximately 50% continued to eat fresh fruit daily (Table 4.4).

	Cereals	Bread	Bran	Fruit
<i>Frequency</i>				
Daily 1989	38	38	11	50
Daily 1990	43	37	15	49
4-6 Week 1989	19	23	10	34
4-6 Week 1990	14	31	4	31
< 4 Week 1989	38	32	62	14
< 4 Week 1990	38	24	61	17

### Comparing Fitness Levels

*There was a significant change in the way officers felt about their physical fitness.*

For questions 18-20, respondents were again required to place a mark along a line 100 mm in length. Officers reported feeling significantly fitter after the programme (49.8 mm compared to 53.9 mm), an increase of 8.2% (Table 4.5). Officers reported no significant change in the amount of physical activity performed at work or in their leisure time. Appendix L {6, p.189} shows responses to Questions 18-20 categorised into 0-20 mm, 20-40 mm, 40-60 mm, 60-80 mm and 80-100 mm.

**Table 4.5 Comparison of Mean Responses to Questions 18 to 20 Health and Fitness Survey, 1989 to 1990.**

	T1 (S.D.) <sup>(a)</sup>	T2 (S.D.)	Difference	% Difference
<i>Question</i>				
18 <sup>(b)</sup>	49.8 (22.2)	53.9 (22.5)	4.1	8.2*
19	25.2 (20.2)	26.2 (21.8)	.92	3.6
20	56.8 (23.3)	54.7 (23.0)	-2.1	3.7

(a) Respondents were required to indicate on a line 100 mm in length either agreement or disagreement with the statement.

- (b)
- Q.18 How physically fit do you feel at the moment? (zero="Unfit")
- Q.19 How would you rate the amount of physical activity you perform at work? (zero="Very little")
- Q.20 How would you rate the amount of physical activity you perform during you leisure time? (zero="Very little")

\* Significant difference  $P < .05$ .

Officers were asked to rate their fitness compared to the rest of the community. After the programme, there were 8.1% more officers who thought they were fitter than the rest of the community. In T1, just over one-third (35.3%) said they thought they were fitter than the rest of the community, compared to 43.4% in T2 (Appendix L {7}, p.190).

Officers were also asked to rate their fitness level compared to other officers of their own rank. In T1, 41.4% reported they thought they were fitter than officers of their own rank, compared to 50.5% in T2. There was a 22% increase in the number who considered themselves to be above average or well above average for their own rank. There were 6 more officers in T2 compared to T1 who considered themselves to be *below average* fitness for their rank.

There was a 14% increase in the number of officers who thought they needed to exercise three times per week to keep fit, indicating a greater understanding of basic physical fitness concepts. During the discussion after each Fitness Assessment, officers were told they needed to exercise three times a week for optimal benefit (Appendix L {8}, p.191).

## **Sport and Exercise Locations**

*There was a large increase in the number of officers who exercised in the street or park.*

Officers were asked where they usually participated in sport or recreational activities. Sport or recreation facilities was the most common answer, with 55.6% indicating this locality in T2 (Appendix L {9}, p.192). After the programme, a large increase was seen in the number who said they exercised in the street or park (from 7.1% to 32.3%).

Officers were also asked where they would like to participate in sport or exercise (as opposed to where they do currently). The most popular response was at a sport or recreation facility, with 62.6% indicating that option. The most noticeable change in location between T1 and T2 was seen in the preference to exercise at home. In T1, 29.3% said they would like to exercise at home, compared to 37.4% in T2.

Most officers (73% in T1 and 71.5% in T2) said they generally preferred to exercise with other people (Appendix L {10}, p.193). About half the officers in T1 (52%), said they would like to join a sports or exercise club, compared to 41.4% after the programme (Appendix L {11}, p.193).

## **Preferred Location and Times to Exercise**

*There was no clear pattern of preferred days, or times of the day when officers would like to participate in a health and exercise programme.*

Monday was most often reported as being the most preferred day to participate in a programme at work (Appendix L {12}, p.194). In T1, the most preferred time to participate was after work (26.3%), with the second most popular choice being in the evening (23.2%). After the programme, 38.4% chose the evenings as their first preference, with after work being first preference by only 15.2% of respondents. During lunch break was the least popular with only 12.1% choosing it as their first preference.

## **What Would Make You Exercise More Regularly?**

*Participants stated having access to facilities at work would encourage them to exercise more regularly.*

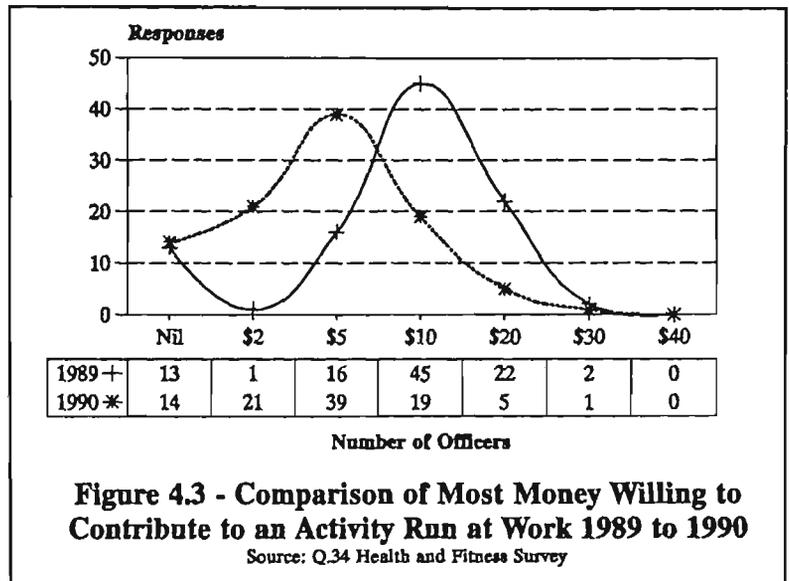
In regard to what would facilitate greater participation by officers in regular exercise, officers were asked to indicate on a list as many responses as was applicable to them (Appendix L {13}, p.195). In T1, 77.8% said that having access to facilities at work would encourage them to engage in more exercise. Approximately half of the group (49.5%) said that having more leisure time and less expensive facilities would also encourage more exercise. In T1, 31.3% said that having a medical check-up before hand would encourage

them to exercise, compared to only 4% in T2. A total of 97% said that they would participate in health and fitness programmes if they were provided at work. This figure stayed the same for T1 and T2 (Appendix L {14}, p.196).

### Payment For Exercise

*Participants were prepared to pay much less for activities run at work in T2.*

The trend graph (Figure 4.3) shows the distinct shift of the curve down and to the left, indicating officers were prepared to pay considerably less money for activities run at work after the programme. Of the group, 84% said they would be willing to contribute to the cost of one or more activities run at work.



### Reasons For Not Getting More Exercise

*The most common reason for not getting more exercise was lack of time.*

Officers were also asked to identify the main reasons for not getting more exercise. In T1, the most often cited reasons were: (i) I haven't got time (55.6%), (ii) I don't have time because of work (35.4%), and (iii) I've got young children to look after (27.3%). In T2, the three most often cited reasons were: (i) I haven't got time (60.6%), (ii) I don't have time because of my work (31.3%), and (iii) I need to rest and relax in my spare time (31.3%).

### Attitude Changes to Physical Fitness

*There were no significant changes in responses to Questions 39-47.*

Questions 39-47 related to the individual's attitudes towards physical fitness, and respondents were once again required to place a mark along a line 100 mm in length to indicate their level of agreement or disagreement. No significant changes occurred between T1 and T2. Results are reported in (Table 4.6).

	<b>T1 (S.D.)<sup>(a)</sup></b>	<b>T2 (S.D.)</b>	<b>Difference</b>	<b>% Difference</b>
<b>Question</b>				
39 <sup>(b)</sup>	40.8 (25.4)	32.9 (24.2)	-7.9	-19.4
40	26.8 (20.2)	26.4 (17.2)	-.4	-.02
41	76.7 (19.7)	75.6 (19.1)	-1.1	-1.4
42	83.1 (15.4)	80.6 (16.5)	-2.5	-3.0
43	21.7 (22.4)	24.3 (24.6)	2.6	11.0
44	16.7 (13.2)	19.0 (16.7)	2.3	12.2
45	71.4 (23.8)	73.9 (20.7)	2.5	3.5
46	70.2 (18.6)	72.4 (18.4)	2.2	3.0
47	24.3 (18.4)	23.3 (18.6)	-1.0	-4.1

(a) Respondents were required to indicate on a line 100 mm in length either agreement or disagreement with the statement.

(b)

- Q.39 To lead a really healthy life you have to give up lots of things you enjoy.  
(zero="Disagree strongly")
- Q.40 Taking part in sport and physical activities helps you to meet people.  
(zero="Agree strongly")
- Q.41 Regular exercise helps work off your tensions.  
(zero="Disagree strongly")
- Q.42 Only those who play sport need to exercise to keep fit.  
(zero="Agree strongly")
- Q.43 Regular exercise has no effect on your weight.  
(zero="Disagree strongly")
- Q.44 Exercise is good for your appearance.  
(zero="Agree strongly")
- Q.45 Fit people enjoy life more.  
(zero="Agree strongly")
- Q.46 Most people do enough in their everyday lives to keep themselves fit.  
(zero="Agree strongly")
- Q.47 People who haven't always been active should not take up exercise.  
(zero="Disagree strongly")

## Group 2

### Fitness Assessment

Table 4.7 lists the overall results for the Fitness Assessment. More detailed results by the subgroups age and gender can be found in Appendix M {1-3, p.199}.

#### Percentage Body Fat

*There was a significant decrease in percentage body fat.*

Percentage body fat decreased significantly by 1.2% between tests from 18.6% to 17.4%, a reduction of 7%. Four measurements decreased significantly - they were the iliac (10.8%), subscapular (15.6%), thigh (9.8%) and abdominal (8.9%) skinfolds. Only those aged between 30-39 years significantly decreased their overall percentage body fat (Appendix M {1}, p.199).

#### Lean Body Weight

*There was a significant increase in Lean Body Weight.*

Lean Body Weight (LBW) was calculated from anthropometric measurements used to assess body composition. Lean Body Weight increased significantly between T1 and T2 from 65.3 kg to 66.3 kg. Those aged less than 39 years increased their LBW significantly, whereas those aged over 39 years made no significant changes. Both males and females increased their LBW significantly (Appendix M {2}, p.200).

#### Flexibility

*There was no significant change in flexibility.*

Hamstring and lower back flexibility improved only marginally from an overall mean of 1.4 cm in 1989 to 1.8 cm in 1990.<sup>(8)</sup> In T1, 40.8% compared to 41.8 % in T2 had poor flexibility. Those aged between 50-59 years had the worst flexibility initially (-9.0 cm), however improved the most, scoring -7.0 cm in T2 (Appendix M {3}, p.202).

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<sup>8</sup> Flexibility is measured in centimetres with the subject seated on the floor, legs flat with arms extended forward. As an approximate guide, a score of zero indicates the subject can touch a point on the apparatus which is at about the level of their toes. A negative score indicates the distance the subject could reach behind that point. A positive score indicates the distance past their toes they could reach, therefore, the higher the score the better is their flexibility.

	<b>T1</b>	<b>T2</b>	<b>t</b>	<b>P</b>
<b>Parameter</b>				
Per cent Fat	18.6	17.4	3.40	.001*
Lean Body Weight (kg)	65.3	66.3	-4.08	.000*
Flexibility (cm)	1.4	1.8	-.75	.453
Abdominal Strength	3.3	3.7	-2.39	.019*
Grip Strength (R) (kg)	49.2	50.5	-2.69	.008*
Grip Strength (L)(kg)	47.0	48.9	-3.24	.002*
Systolic BP (mm Hg)	129.8	125.0	4.09	.000*
Diastolic BP (mm Hg)	81.6	76.3	6.36	.000*
VO <sub>2</sub> (l.min. <sup>-1</sup> )	3.8	3.9	-1.29	.199
Relative VO <sub>2</sub> (ml.kg. <sup>-1</sup> min. <sup>-1</sup> )	47.3	47.8	-.65	.515

\* Significant difference at the  $P < .05$  level.

### Abdominal Strength

*There was a significant change in abdominal strength.*

Abdominal strength increased significantly by 10.5% from 3.3 to 3.7.<sup>9</sup> Those aged between 30-39 years were the only ones to significantly improve (3.3 to 3.6). Females performed marginally better than males on the abdominal strength test. However, male officers increased their abdominal strength significantly (3.2 to 3.6), whereas females did not improve significantly (3.8 to 3.9).

### Grip Strength

*There was a significant change in grip strength.*

<sup>9</sup> Abdominal strength was measured by use of a five stage test, with a score of 1=Poor, 2=Below average, 3=Average, 4=Above average and 5=Excellent.

Grip strength (left and right hands) increased significantly from T1 to T2. Those aged less than 39 years improved their grip strength significantly compared to older officers who did not improve significantly. Male officers increased their grip strength in both their left and right hands significantly (50.3 kg to 52.0 kg and 52.2 kg to 53.7 kg respectively), while female officers improved their left hand grip strength significantly (30.1 kg to 32.7 kg).

### Haemodynamic Measures

*Systolic and diastolic blood pressure decreased significantly.*

Systolic blood pressure overall decreased significantly by 3.6% from 129.7 mm Hg to 125.1 mm Hg. Diastolic blood pressure also decreased significantly by 6.5% between tests from 81.6 mm Hg to 76.3 mm Hg. Although officers of all age groups showed decreases in systolic blood pressure, those aged between 20-29 years reduced their systolic blood pressure significantly from 128.2 mm Hg to 119.3 mm Hg. In relation to mean diastolic blood pressure, every age group with the exception of the 50-59 year group showed a significant decrease.

### Spirometry

*Spirometry data are not reported due to an error.*

Spirometry measurements have not been reported due to equipment/measurement error with the flow head of the spirometer and is discussed further in Chapter 5.<sup>(10)</sup>

### Aerobic Fitness

*Overall aerobic fitness did not improve significantly. However, those officers whose aerobic fitness was below average in T1, improved significantly in T2.*

Aerobic capacity (absolute  $\text{VO}_2$ ) increased marginally by 2.1% ( $.08 \text{ l}\cdot\text{min}^{-1}$ ). Relative  $\text{VO}_2$  also increased only marginally by 1.1% ( $.52 \text{ ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ ). Both results were not statistically significant. Those aged between 30-39 years were the only age group to demonstrate an improvement (46.3 to 47.3  $\text{ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ ). Of the group, the 29.1% whose relative  $\text{VO}_2$  was below 40  $\text{ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$  in T1, increased their  $\text{VO}_2$  significantly by 10%.

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<sup>10</sup> *An insidious measurement error became apparent well into the testing when observed readings appeared slightly more elevated than expected. Investigation revealed a problem with the flow head of the mouthpiece. Although the flow head appeared clean, tiny matter had substantially clogged the mesh of the flow head causing a subsequent reduction in airflow which had the effect of increasing the result obtained. While the majority of the data were probably only marginally effected, it was decided to exclude them altogether.*

## **Programme Activities**

*The programme consisted of activities conducted between measurements made at the Risk Screening Clinic and Fitness Assessment (1989-1990). In this section, results reported include the project launch, fruit promotion, Healthy Barbecues, Healthy Breakfasts, exercise promotion (tennis, ten-pin bowling, golf, cricket, Jump Rope For Heart, exercise circuit), the Stop Smoking and Stress Management Seminars and the facility analysis.*

### **Project Launch**

*The project launch attracted wide interest from officers within the Victoria Police and from local and national media.*

The project launch was well attended by representatives from the Victoria Police, as well as by local newspapers and the Channel 10 National News. Several articles appeared in local newspapers in "Y" District. Channel 10 covered the launch in their evening news in a 90 second segment. Assistant Commissioner Robertson, Mr Terry Norris (Member of Parliament and a member of the Sport and Recreation Advisory Council), and Inspector Bodycoat (Officer in Charge of the Physical Health Unit) spoke at the launch.

### **Fruit Promotion**

*All stations in the district were visited and given fruit.*

Very different reactions were received at the stations during the fruit promotion, with three stations displaying negative attitudes towards the concept. As many officers as possible were spoken to during each visit, with many officers inquisitive of the motivation for delivering fruit to them. It is estimated that approximately 250 officers were seen during this promotion.

### **Healthy Barbecues**

*Nine barbecues were held at stations, with 135 officers participating.*

One hundred and thirty-five police (or 30% of the sample population) attended the Healthy Barbecues. Barbecues were held at Ringwood, Nunawading, Burwood, Croydon, Lilydale, Mooroolbark, Monbulk, Ferntree Gully and Bayswater Police Stations. Officers were charged three dollars each to cover most costs. Several booklets, handouts and pamphlets on display at each barbecue were taken by officers.

## **Healthy Breakfasts**

*Healthy Breakfasts were held at five police stations in "Y" District.*

Ninety seven officers attended the Healthy Breakfasts, representing 21% of the sample population. Only one host station did not support the aims of the Healthy Breakfasts. The four other stations however, were extremely positive. Officers read the literature supplied while eating their breakfast.

## **Exercise Promotion**

*In all, seventy-two officers participated in the activity days representing 16% of the sample population.*

### **Tennis**

*The tennis day was held at the Croydon Leisure Centre, with 19 officers participating.*

A doubles round-robin competition was played, enabling officers to play virtually all day. Games were timed to run for 20 minutes, with a five minute break in between. A doubles combination (two male officers) from Nunawading were awarded a trophy for winning the competition overall.

### **Ten-Pin Bowling**

*Ten-pin bowling was held at the Box Hill Bowl, with three teams entering.*

Ten-Pin bowling was held at the Box Hill Bowling Centre. Three teams participated, with Lilydale Police Station winning the competition overall. Prizes were awarded to the winning team, as well as to an officer from Lilydale who had the lowest score.

### **Golf**

*The Golf Day was held at Croydon, with fourteen officers participating.*

Golf was held at the Croydon (Private) Golf Club, with fourteen officers participating. Prizes were awarded for the longest drive, nearest the pin, the highest score, and the competition overall by having the best Calloway score.

## **Cricket**

*Although outdoor cricket had been scheduled, heavy rain caused the venue to moved to an indoor cricket venue.*

Cricket had been scheduled to be played at the Surrey Park Number 3 Oval. On the day however, it rained heavily so the competition was turned into an indoor cricket competition at the Ringwood Indoor Cricket Centre. Three stations entered, namely Nunawading, Box Hill and Boronia. Box Hill won the competition, with Nunawading finishing second. Player of the series was awarded to an officer from Nunawading, while an officer from Boronia won the "most outs". A barbecue was supplied for lunch, with 28 people attending. The cost per player was four dollars.

## **Jump Rope For Heart**

*Ten teams entered the Jump Off, with \$2,266.50 being raised for research into heart disease.*

Forty-four officers participated, representing 8.8% of the sample population. Eleven teams of four officers entered the Jump-Off day from various stations. The teams raised a total of \$2,266.50. The National Heart Foundation allow organisations to keep 10% of funds raised to help promote the programme and other health-oriented programmes within the workplace. Two hundred dollars was used to pay for the basketballs and rings for each participating station, as well as for prizes and refreshments. Five teams were awarded t-shirts from the National Heart Foundation for raising over \$200 per team.

## **Exercise Circuit**

*The exercise circuit was promoted at a number of police stations, with five eventually having a circuit established at their station.*

## **Other Activities**

*The horseriding, beach volleyball and family days did not go ahead due to a lack of interest.*

## **Facility Analysis**

*A number of health and fitness facilities were contacted and an assessment conducted of their facilities, classes, instruction and cost.*

An eight page booklet was produced and circulated to all stations within the district. These booklets contained details of the facilities available, activities conducted, their cost, the availability of child-minding facilities and other relevant details. Several complimentary passes were made available to Officers in Charge for dissemination. Several stations also purchased gym memberships at discounted rates for use by social club members.

## **Health Seminars**

*Two Stop Smoking Seminars and one Stress Management Seminar were held.*

### **Stop Smoking Seminars**

*The seminars attracted a total of 16 officers.*

Forty-three smokers indicated they were interested in stop smoking programmes on the Health and Fitness Survey. Seven officers attended the first Stop Smoking Seminar held at the Academy. The second seminar held at the Knox State Emergency Service office was attended by 9 officers. The carbon monoxide analyser and tremor-tester created the most interest. Evaluation surveys were completed by participants at both seminars, with very positive feedback.

### **Stress Management Seminar**

*The Stress Management Seminar attracted 15 participants.*

At the start of the programme, 13 officers indicated an interest in stress management and time management. Eleven (85% of the interested population) participated in the seminar. Evaluation surveys were completed by the majority of participants with positive results.

## **Evaluation Survey**

*The Evaluation Survey was distributed to participants and non-participants within the target population to help measure the effectiveness of the study.*

The Evaluation Survey sought to obtain reasons for non-participation in the programme; assess communication channels used (such as posters and letters); obtain feedback on the newsletter and other written material; ascertain participation rates at local health and fitness centres; ascertain the extent the study had helped officers in terms of their own health and fitness, work performance and station morale; ascertain whether officers thought it was a worthwhile study, and if it should be extended statewide; and ascertain if study objectives had been met.

The figures presented below are from an entirely different sample of officers previously reported, and includes *participants and non-participants* from the target population. They are not the actual attendance figures for the programme but represent those respondents from the district who returned a completed Evaluation Survey. A breakdown of respondents to the Evaluation Survey by rank is at Appendix N {1, p.202}. All Evaluation Survey data are tabulated at Appendix N {1-16}.

### Sample Size

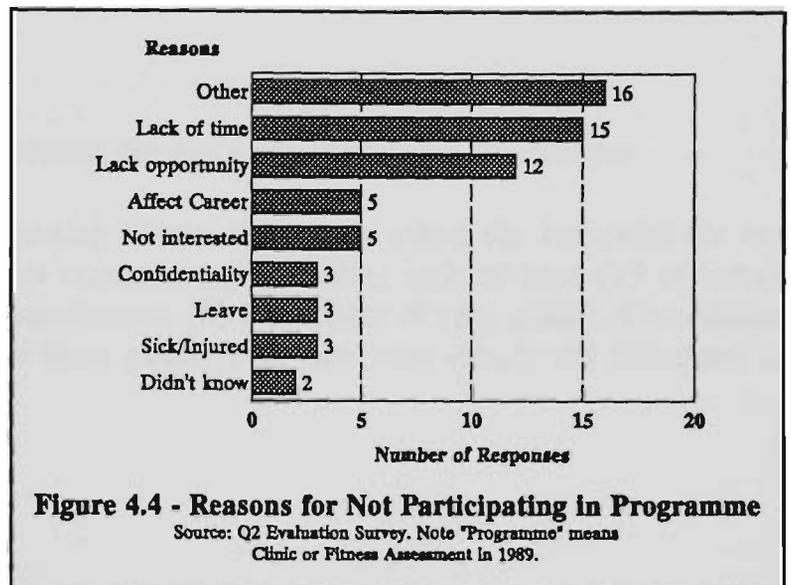
*Two-hundred and sixty-two officers completed the Evaluation Survey (Appendix C {6}) which was circulated to all officers from the target population.*

### Questions 1-3

#### Participation in the Programme

*Eighty-four per cent of survey respondents had attended the Risk Screening Clinic in 1989 and 56% had a Fitness Assessment.*

Fifteen per cent did not participate in either the Risk Screening Clinic or a Fitness Assessment in 1989 (Appendix N {2}, p.203).



Several reasons were offered for non-participation in the study. Figure 4.4 shows the most common reasons were lack of time (15 officers), lack of opportunity (12) and on recreation/sick leave (10). In the "other reasons" category, some of the reasons for not participating were that they had previously been (medically) checked or were already under medical supervision, work commitments, transferred out of the district, or were pregnant (Appendix N {3}, p.203).

#### Question 3 (a)

*The "Jump Rope For Heart" Jump Off Day was the most successfully advertised activity, while the Healthy Barbecues were attended by more officers than any other activity.*

The three activities most successfully "advertised" were; the "Jump Rope For Heart" Jump Off Day (67.9% heard about this activity), the Healthy Breakfasts (57.6%), and the Healthy Barbecues (54.2%). More officers attended the Healthy Barbecues than any other activity (38.2%), followed by the Healthy Breakfasts (22.1%), and the Jump Off Day (9.5%). The

least successfully advertised activity was Ten Pin Bowling, with 29.8% recalling hearing about it (Appendix N {4}, p.204).

### Question 3 (b)

*The most common reason for not attending the Risk Screening Clinic was that existing health problems were already being managed.*

The most common reasons given for not attending the Risk Screening Clinic in T1 was that the officer's own Doctor was already managing existing health problems and/or had arranged for similar measures to be taken as those conducted at the Victoria Police Risk Screening Clinic (Appendix N {5}, p.205).

### Question 3 (c)

*A lack of time was the most common reason for not having a Fitness Assessment.*

If officers had attended the Risk Screening Clinic, they were asked the reason(s) for not having a Fitness Assessment. The most common reasons were; lack of time (19 officers), other [non-specified] (9) and work commitments (8) (Appendix N {6}, p.206). One officer said confidentiality was a problem and three people said they were simply not interested in attending.

### Question 3 (d)

*The time activities were conducted and work commitments were the most common reasons for not attending programme activities.*

Some officers participated in scheduled activities (eg. golf and tennis), but chose not to participate in the Risk Screening Clinic or a Fitness Assessment. Apart from "other" reasons, the times activities were conducted and work commitments were the most often cited reasons for not attending (Appendix N {7}, p.207).

### Questions 4-6

#### **Bulletin/Newsletter**

*Over three-quarters of officers received the Bulletin/Newsletter, while 94% found it to be informative.*

Seventy-seven per cent of respondents said they received the "Operation Physicop" newsletter (Appendix N {8}, p.208). Seventy-four per cent of those who received the newsletters said they had read them. When asked which newsletters they had read, 15.9% said they had read newsletter number one, 30.1% number two, 35.8% number three, 12.5% number four, and 5.7% number five. Ninety-four per cent of officers said they found the newsletter to be informative, and almost 53% thought the newsletter was *always* informative.

**Questions 7-12**

**Fitness Centres**

*Forty-seven per cent of respondents said they saw this booklet.*

Seventeen per cent stated that they had received a complimentary pass, with just under a quarter (22.2%) of those officers who received a pass actually attending a centre. Overall, 3.8% of those completing the Evaluation Survey attended a centre with a complimentary pass.

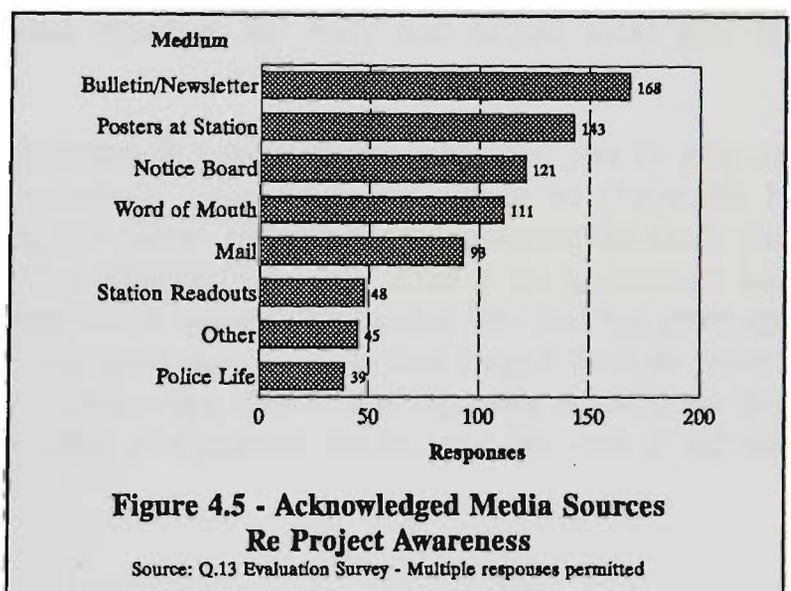
Just over one in twenty (5.3%) had joined a fitness centre in the previous twelve months (Appendix N {10}, p.209). Almost one in seven (15.9%) stated they had attended a centre on a casual basis within the previous twelve months. One-third of these officers (33.3%) attended less than weekly, while most officers (42.2%) attended 1-2 weekly. Just over 24% attended 3-5 weekly, while no-one said they attended a centre daily.

**Question 13**

**Communication**

*The Bulletin/Newsletter was the most successful communication medium.*

Figure 4.5 shows that the regular newsletter produced for "Y" District officers was the most successful medium through which officers found out about "Operation Physicop", with 64.1% stating this. Posters (54.6%) and noticeboards at the workplace (46.2%) were the next most successful (Appendix N {11}, p.210).



## Question 14

### How Has "Operation Physicop" Helped You?

*A high percentage of the target population reported the study had helped them in some way.*

Of the respondents, 92.4% said that the study had helped them become more aware of health and fitness issues (i.e. circled 2 or above on the 1-5 scale), while 53.8% said the study had helped them very much (i.e. circled 4 or 5) (Appendix N {12}, p.211).

Ninety-five per cent said that the study had helped them become more aware of their *own* health and fitness, while 60.7% believed the study had helped them very much. Ninety-three per cent said that the study helped motivate them to take more care of themselves, while 31.7% said it helped very much. Of the group, 87.1% said it helped them change their diet for the better, while 38.9% said it helped them very much. Eighty-seven per cent said it helped them exercise more regularly, while 20.6% said it helped them exercise very much. Of the group, 70.7% said it helped them lose weight, and 17.6% said it helped them lose weight very much, while 86.2% reported the study had improved their well being, and 29.4% said it had helped very much. Finally, 78.7% said the study had improved their self-image, while 21.8% said it had helped improve their self-image very much.

## Questions 15 and 16

### Smoking

*One-quarter of the smoking population reported the study had helped them give up smoking.*

In response to the question, "Has 'Operation Physicop' motivated/helped you to give up smoking?", 66 officers (25.2% of respondents) either responded yes or no (Appendix N {13}, p.212). Of those who responded, one quarter (or 17 officers) indicated the study had helped them to give up cigarette smoking. Smokers were also asked if the programme had motivated/helped them to reduce the number of cigarettes smoked if they had not given up. Thirty-eight per cent of smokers (17) indicated that the study had helped them to reduce the number of cigarettes they smoked. The average reduction of cigarettes smoked per day was 9. The minimum reduction in number of cigarettes smoked per day was 2 and the maximum was 20.

**Questions 17 and 18**

**Work Performance and Station Morale**

*Over two-thirds of respondents reported that the study had helped their work performance, while more than 85% reported that the study had improved morale at their station.*

Of the respondents, 67.6% thought that the study had helped their work performance, while 16.4% thought it had helped them very much (Appendix N {14}, p.212). Over 85% (85.4) reported the study had increased the morale of officers at their stations, while one-third (37%) said it had helped very much to increase morale.

**Question 19**

**How Could "Operation Physicop" Be Improved?**

*Almost half of respondents said the study could be improved by providing more activities at work.*

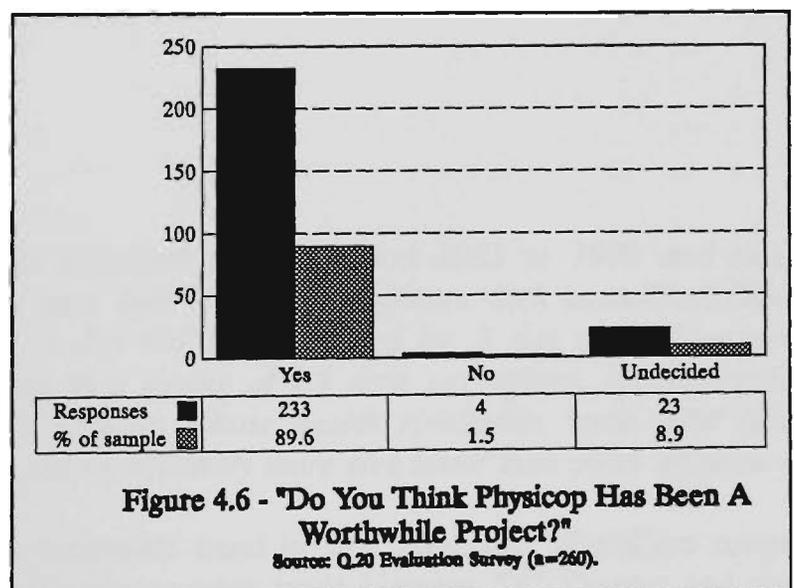
Approximately half (47.7%) of respondents said "Operation Physicop" could be improved by providing more physical and health related activities at work (Appendix N {15}, p.213). The next most popular suggestions were more breakfasts and barbecues (37.4%), and more activity days (36.3%). Almost a quarter (24.4%) suggested communication needed to be improved.

**Question 20**

**Was It A Worthwhile Project?**

*Nine out of ten respondents thought it was a worthwhile project.*

Approximately 90% (89.6) stated they thought "Operation Physicop" was a worthwhile project, while 8.9% remained undecided, and only 1.5% thought it was not worthwhile (Figure 4.6) (Appendix N {16}, p.213).



## Question 21

### Would They Like To See The Project Extended Statewide?

*Nine out ten respondents would like to see the project extended statewide.*

Approximately 90% (89.5) said yes, they would like to see the project extended statewide. Of the respondents, 8.1% remained undecided, and 2.3% did not think it should be extended (Appendix N {16}, p.213).

## Question 22

### Comments

*Several comments were made by officers in relation to "Operation Physicop".*

Some officers offered constructive criticisms, while others offered suggestions for future programmes. Overall, very few negative comments were received.

In summary, 8.7% said that the programme should be compulsory, for example, the Risk Screening Clinic and the Fitness Assessment. Seven officers made the comment that gymnasiums should be in all stations, while one officer suggested that Police Academy hours be extended. Four officers suggested the facilities should be extended to family or visitors. Ten per cent (26 officers) commented that time should be allocated during work hours to attend programmes such as "Operation Physicop", while almost 6% believed it was difficult to participate in "Operation Physicop" programmes due to manpower shortages and shift work.

## Sick Leave/WorkCare

*Sick leave and WorkCare usage was averaged for the period 1985 to 1990 and then compared to 1990 for both the entire state and "Y" District officers. Sick leave/WorkCare in the rest of the state increased by .8 day while it decreased by .3 day per officer per year in the target population, equating to a saving of 1.1 days per officer. An estimated saving in wages alone was \$44,416. Officers whose health risk/habits were poor (for example heavy drinkers or smokers) used significantly more sick leave than other officers.*

In order to determine if there was a noticeable trend in sick leave and WorkCare usage during or as a result of the study, comparisons were made between "Y" District and the rest of the state between 1985 and 1990. During this period, all officers (except the target population) were absent on average 12.6 days per year. In "Y" District, the average was 12.2 days per year each during this period. Table 4.8 shows the trends in sick leave and

WorkCare for the period 1985 to 1990. The data for each year were averaged and compared with 1989/90 for "Y" District and all of the state.

	<i>All 85-90(a)</i>	<i>All 1990</i>	<i>Change</i>	<i>"Y" 85-90</i>	<i>"Y" 1990</i>	<i>Change</i>
Sick Leave	6.7	6.8	↑ .10	7.3	7.0	↓ .30
WorkCare	5.9	6.2	↑ .30	4.9	4.3	↓ .60
Total Absent	12.6	12.9	↑ .30	12.2	11.4	↓ .80

(a) "All" means the entire state except "Y" District officers.

In 1990, sick leave and WorkCare usage in "Y" District decreased to 11.4 days per officer per year from 12.2 recorded from 1985-90. "Y" District sick leave/WorkCare usage *decreased* by .8 of a day per officer, while the rest of the state *increased* by .3 of a day per officer. In other words, there was a saving of 1.1 extra days per officer per year in the target district. Expressed another way, the district *gained* an additional 501 working days or 4,008 hours.

To calculate how much money was "saved" by the reduction in sick leave/WorkCare, or more accurately, not expended on employees who were not at work, the total number of each rank in the target district was estimated. The approximate break-down of the district in terms of rank was ascertained from a personnel list dated on the 31st July, 1989. Their daily pay rates were then calculated and multiplied by their approximate frequency within the district. The subsequently calculated total amount of money not expended on lost productivity (paying officers when they are not at work), was \$44,416. This figure does not take into account the extra costs associated with absenteeism, such as overtime, shift allowances, upgrading, or re-training. Nor does it take into account the subsequent effects on understaffed police stations, the reduced service offered to the public and the extra stress placed upon those officers who are forced to provide a service while understaffed. When calculations are based on the raw figures between the mean total absent sick leave/WorkCare data for the rest of the state and "Y" District, there is still a difference of one full day between "Y" District and the rest of the state. If the programme had achieved similar results statewide, a total saving of 10,890 working days would have occurred, at a financial saving of almost \$1.7 million.

Neuropsychological disorders (mainly stress disorders) increased by 34.1% during 1989/90, while the incidence of infections decreased by 27.4%, gastroenteritis 32%, "other" injuries 182%, and "other" sicknesses 2.8%. Abrasions, burns and bruises increased from one case to twelve. Although statewide data for the type of sickness were not available for the last

five years, the data for 1989/90 shows the changes that occurred in "Y" District were generally unique to that district and did not occur elsewhere. For example, neuropsychological disorders comprised 9.7% of all sick leave/WorkCare statewide compared to 11.1% in "Y" District, consistent with the *rise* observed in "Y" District. Gastroenteritis comprised 14% of all cases statewide compared to 13% in "Y" District, which is consistent with the *fall* observed in "Y" District. A difference however did occur between the *type* (sick leave or WorkCare) of neuropsychological occurrences. In the state, 50.2% of all neuropsychological absences were WorkCare claims, compared to 46% in "Y" District.

### **Sick Leave/WorkCare Occurrences**

*There was a 14.1% reduction in sick leave occurrences and an 8.6% reduction in WorkCare claims.*

Over the previous five years, the proportion of sick leave taken compared to WorkCare within the target population remained approximately 86%. During 1989/90 however, there was a 14.1% reduction in the number of sick leave occurrences and an 8.6% reduction in the number of WorkCare claims in "Y" District when compared to the previous five years. In the last two years, (since 1988/89), there has been a considerable reduction in the amount of sick leave taken without a medical certificate. In 1987/88, 62.2% compared to 56% in 1989/90 of sick leave was taken without a certificate.

### **Sick Leave Usage Compared to Health Risk/Habits**

*High risk officers, for example smokers and heavy drinkers, used more sick leave than other officers.*

Comparisons were made between high risk and low risk individuals to determine if any differences existed between their use of sick leave. Table 4.9 shows that in 1988/89, officers in many of the high risk categories used more sick leave than low risk officers. In 1988/89, officers whose cholesterol  $\geq 5.5$  mmol/L used .6 day more on average per year than officers whose cholesterol was  $< 5.5$  mmol/L, and similarly for triglycerides  $\geq 2.0$  mmol/L 1.8 days more, those who did no regular exercise 1 day more, and those who were considered heavy drinkers, 1.8 more days on average per officer.

More importantly however, are the changes in sick leave usage by high risk officers during the treatment period. The study intended to identify high risk personnel through coronary risk screening, fitness assessments and through increased awareness of health and fitness issues. Officers who attended the Risk Screening Clinic in 1989 (n=362), who had elevated cholesterol, blood pressure or coronary risk; were overweight, heavy drinkers, smoked cigarettes, had poor diet scores, or did no regular exercise considerably increased their use of sick leave during the treatment period. For example, those officers whose systolic blood pressure  $\geq 140$  mm Hg, used on average 12.8 more sick days per year in 1989/90 than officers whose blood pressure was  $< 140$  mm Hg.

**Table 4.9 Comparison in Use of Sick Days for High and Low Risk Status Officers, 1988/89 to 1989/90, Group 1.**

<i>Health/Fitness Parameter</i>	<i>88/89 Sick days</i>	<i>89/90 Sick days</i>	<i>Difference</i>	<i>Number of Officers</i>
Cholesterol $\geq$ 5.5 mmol/L	6.5	8.7	+ 2.2	92
Cholesterol < 5.5 mmol/L	5.9	6.4	+ .50	208
Triglycerides $\geq$ 2.0 mmol/L	7.7	7.2	- .50	41
Triglycerides < 2.0 mmol/L	5.9	7.0	+ 1.1	255
Lifestyle Score $\geq$ 12	5.8	7.8	+ 2.0	191
Lifestyle Score < 12	6.6	5.9	- .70	105
Systolic BP $\geq$ 140 mm Hg	5.2	18.6	+ 13.4	30
Systolic BP < 140 mm Hg	6.2	5.8	- .40	266
Diastolic BP $\geq$ 90 mm Hg	6.1	10.9	+ 4.8	56
Diastolic BP < 90 mm Hg	6.1	6.2	+ .10	240
Diet Score $\geq$ 6	5.2	7.9	+ 2.7	156
Diet Score < 6	6.9	6.4	- .50	140
Exercise $\geq$ 3 (Sedentary)	6.8	10.3	+ 3.5	75
Exercise < 3 (Active)	5.8	6.0	+ .20	221
Coronary Risk % $\geq$ 50	6.4	7.6	+ 1.2	101
Coronary Risk < 50	5.9	6.8	+ .70	195
BMI $\geq$ 25 (Overweight)	6.1	7.6	+ 1.5	186
BMI < 25	6.1	6.3	+ .20	110
Smoker	6.0	7.5	+ 1.5	94
Non-Smoker	6.0	6.9	+ .90	202
Alcohol $\geq$ 3 (Heavy)	7.8	10.0	+ 2.2	14
Alcohol < 3	6.0	6.9	+ .90	281

## **Chapter 5**

### **Summary, Conclusions and Recommendations**

## Chapter Summary

### Summary, Conclusions and Recommendations

*The purpose of this study was to determine the effectiveness of a pilot workplace health promotion programme on the health status of Victoria Police officers. Results indicate that there was a significant improvement in the police officers' health and fitness after the treatment period, indicating that the characteristic down slide in health and fitness which occurs after graduation may be both avoidable and reversible. Graduating junior police officers are physically fitter and healthier than the general community, but within a short time, substantial weight gain occurs and physical fitness declines significantly.*

*At the commencement of the programme, officers were sceptical and apprehensive. Attitude towards the programme improved however, and participation rates were generally very good. In a short time, it became apparent that the project was seen by officers as a very positive initiative. Based on the results obtained, it seems highly likely that a state wide workplace health and fitness programme would work within the Victoria Police.*

*Participation in most activities was enthusiastic during the programme. The homogeneity of the police sub-culture is well known, and it was anticipated that considerable efforts would be needed to effect change, however significant improvements occurred in officers' health and fitness in a short period of time. The physical fitness levels within the Victoria Police represent the police cultural "norm", reflecting the lifestyles which often include excessive alcohol consumption, overeating and lack of physical exercise.*

*The significant changes achieved either reflect the extent of the need for change, or that activities and measures used in the study complemented the police sub-culture by assuming some of its characteristics (for example team spirit at individual workplaces), or a combination of both. It is felt that future programmes which follow the present study's format will be able to achieve similar changes.*

## **Chapter 5 Summary, Conclusions and Recommendations**

This chapter includes an introduction; summary of the findings; conclusions drawn on the findings; impact of the study; strengths, weaknesses, and limitations of the study; and implications and recommendations for future research studies.

### **Introduction**

Research has identified problems in the current health and physical fitness of Victoria Police officers. Major lifestyle concerns include poor nutrition, the need for increased nutritional education and the obvious lack of regular exercise. Operational police officers require a level of health and fitness which will allow them to effectively carry out their daily duties. Officers who are not physically fit will not accomplish tasks as effectively as fitter officers, and in fact may not perform the same tasks at all. Because of the physical nature of law enforcement, stringent physical fitness requirements are part of the initial police selection criteria.

Despite these physical requirements, much of a police officer's shift involves little or no activity. The sedentary periods are frequently interrupted by tasks involving bursts of physical exertion which may require enhanced health and fitness. Despite this, after completing a probationary period of approximately 16 months, officers are not required to undergo any further medical or fitness assessment for the rest of their careers. It has been previously demonstrated that the health and fitness of officers declines markedly when no formal physical health and fitness assessments are conducted. Therefore, the importance of improving the health and fitness of police cannot be overstated.

In response to this need, a research proposal was developed and presented to Force Command, the Police Association, and Senior Management of the Department and Sport and Recreation. The Department of Sport and Recreation provided funding for an employee health and fitness programme to be trialled over a twelve month period in "Y" District. The aim of the study was to determine the effectiveness of a pilot workplace health promotion programme on the health status of Victoria Police officers.

The study, which involved police in the Eastern Suburbs of Melbourne, targeted a select group of employees engaged in employment which has a negative influence on maintaining a healthy lifestyle. Negative factors include shift work, time constraints and lack of resources. The present study consisted of tests conducted before and after a twelve month health and lifestyle awareness programme, which provided activities and information aimed at improving officers' health and fitness. The testing consisted of a Risk Screening Clinic, Fitness Assessment, Health and Fitness Survey, analysis of Sick leave/WorkCare incidence and patterns, and a final Evaluation Survey.

## Summary of Findings

The majority of null hypotheses which stated that the study would not have an overall affect on health and fitness parameters measured at the Risk Screening Clinic and the Fitness Assessment were rejected at the  $P < .001$  level. Two Multi-factor Analyses of Variances (MANOVA) were conducted and significant changes were apparent.

### Risk Screening Clinic - Group 1

Group 1 comprised officers (n=145) who attended the Risk Screening Clinic in 1989 and 1990. This group improved positively and significantly in seven parameters - they were diastolic blood pressure, weight, Body Mass Index (BMI), cigarette smoking, exercise, overall diet score and lifestyle score.

In Group 1, body weight decreased significantly by an average of 1.15 kg. BMI was also decreased significantly by 1.4 per cent. This finding corresponds to a study among 585 bank employees in Minnesota (Fleming, 1987). In the present study, a total of 56 officers (in Group 1) lost an average of 3.22 kg. As a result of weight loss, several health benefits can be obtained. For example, a loss of 1 kg may reduce blood pressure by 2 mm Hg (Jennings, 1985). Even a small change in body weight can be sufficient to produce a marked and significant prolongation of life expectancy (Turner, 1990). Excess body weight is associated with diabetes, high blood pressure, reduced exercise capacity and high blood lipids (cholesterol and triglycerides). The weight loss which occurred in the present study is significant when anecdotal reports and the impressions of the researcher are combined suggests that if weight measurements had been taken six months into the programme, these results would have been even more significant. It appears that generally, a "peak" occurred in the weight loss of officers after the study had been running for about six months.

Because hypertension is one of the most important risk factors contributing to coronary heart disease, monitoring blood pressure was a high priority during the course of this study. While diastolic blood pressure decreased significantly, systolic blood pressure increased significantly at the Risk Screening Clinic. A significant increase in systolic blood pressure has not been evident in similar studies; for example, in the study conducted at the California Highway Patrol (Superko, 1988). However, at the Fitness Assessment, both systolic and diastolic blood pressure decreased significantly. It is difficult to explain why one blood pressure measurement would increase and the other decrease. One possible explanation however is that a measurement error occurred. Blood pressure measurement is susceptible to a number of errors (Van Doorn, 1990). A case in point is taking measurements too quickly. Another explanation for the increase in systolic pressure and the decrease in diastolic pressure is the result of an "anticipatory effect" by officers being retested.

Test-retest blood lipid data are not available due to a measurement error at the Risk Screening Clinic. The methodological problem referred to previously was encountered during mobile testing conducted by the Risk Screening Clinic. The problem related to the operation of the Kodak Ektachem DT 60 blood analysis machine, used to analyse patient's blood for cholesterol and triglyceride concentrations. Procedures to ensure accurate and valid results had not been prescribed for the operation of the machine prior to commencement of the Mobile Risk Screening Clinic.<sup>(1)</sup> These procedures have since been commenced, however, none of the data from the Mobile Risk Screening Clinic can be used because accuracy cannot be determined.<sup>(2)</sup> During testing, it was evident that there was a problem with the machine due to some of the irregular readings being recorded. As a result of detailed discussions with laboratory scientists at Kodak, it became apparent that the Mobile Risk Screening Clinic results could not be validated under these conditions.

Due to unexpected high measurements, many officers attended their own doctors to have their blood lipids analysed. From several anecdotal cases, most cholesterol levels were in the expected range, and were sometimes considerably lower than the Mobile Risk Screening Clinic result. Clinic staff, upon becoming aware of the testing error, set about trying to identify the cause. The mobile Kodak machine was set up next to the stationary machine used at the Police Hospital, and both machines received the same sample of blood from approximately 20 patients. The resulting differences in readings left no doubt that the results from the mobile unit were incorrect.

While consideration was given to conducting the tests again, it was decided not to do so for a number of reasons. Firstly, the time commitment required to retest the large number of officers again made it impractical in terms of other programme commitments. Secondly,

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<sup>1</sup> It is important to note that Kodak was in no way at fault in relation to the procedures not being adopted or prescribed.

<sup>2</sup> The procedures that should have been adopted were quality control (QC) and calibration checks. The QC check involves analysing a specifically manufactured substance with a known and rigorously tested cholesterol concentration (as if analysing a patient's blood). The result obtained is then compared with the known concentration to determine accuracy. For QC results to be effective, they need to be performed at two levels - in other words with two different concentrations of cholesterol. However, Risk Screening Clinic staff had previously been advised that single-level checks were satisfactory. Bi-level checks are required to ensure that the machine is measuring cholesterol accurately at all levels. The machine may for example accurately determine the cholesterol concentration at one level, but be inaccurate at another. The results must fall within a certain range to be acceptable. If results consistently fall outside this range, further investigation is required.

The second procedure, calibration of the machine, must occur regularly to ensure that the machine is accurately measuring blood lipids. The procedure must also be adopted whenever the machine is moved. The Mobile Risk Screening Clinic involved transporting the machine by vehicle regularly during study testing. It was noticed that as the testing continued from week to week, the results appeared to become more inconsistent. By the time the problem was properly understood, all the Mobile Risk Screening Clinic readings had been taken. The Risk Screening Clinic staff had not been informed that the QC needed to be done at two levels, nor had they been informed of the re-calibration requirement following movement. All the data have been excluded because there is no way of verifying its validity.

it was felt that asking officers to return for another test was unreasonable. Many officers returned after the twelve month period to be retested because they were asked to, not because of a perceived need. Thirdly, as mentioned above, many officers had already gone to their own Doctors after receiving their results to determine the accuracy of the test. For these reasons, it was decided to ignore blood lipid measurements in T2 altogether.

The effects on officers who at T2 received elevated results compared to their T1 results were significant. As has been shown, many officers in the district made a genuine attempt to improve their dietary and exercise habits. Feedback in workplace health promotion programmes is critical, however, officers who were anticipating reductions in their blood lipids, only to be told that their results were worse were very disappointed. The demotivating effects this had on officers cannot be understated. The unfortunate consequences of this error were potentially far-reaching. As a consequence, the Director of Health Services sent letters to officers explaining that there was an apparent error in the blood lipid testing.

However, an indication of the effect of the study in reducing lipid levels can be obtained by examining the data for the nine police officers who re-attended at the Risk Screening Clinic in 1989 and 1990. These data are valid because the faulty mobile unit was not used for testing. This group achieved a 16.4 per cent reduction in cholesterol, and a slight increase in triglyceride levels (7.5 per cent). These officers also improved their overall coronary risk significantly by 27 per cent.

### **Risk Screening Clinic Questionnaire**

The Risk Screening Clinic Questionnaire (Appendix H {1}) was administered to participants upon attending the Risk Screening Clinic in T1 and T2. Significant reductions occurred in self-reported cigarette smoking, alcohol consumption, dietary habits and exercise levels.

Smoking for the entire group (smokers and non-smokers) was reduced by 30.3 per cent. Smoking rates (for smokers only) alone decreased by 37.9 per cent (18.2 to 13.2 cigarettes per day). Reductions of this magnitude are very encouraging, and are similar to those found by Barzilai (1989), in a programme involving 1,004 employees in over 17 sites of a communications company, where 32.4 per cent quit smoking. Cigarette smoking is a major risk factor adversely affecting the health of smokers throughout the community. Co-workers of smokers are also at increased risk of disease from passive smoking. It has been estimated that the cost-benefit ranking for risk factors is cigarette smoking, blood pressure, lipid levels and exercise (Chadwick, 1982), indicating its importance.

Shift workers tend to consume more alcohol than non-shift workers (Moore-Ede and Richardson, 1985) with obvious health, fitness and welfare repercussions. The costs of alcohol to an organisation in terms of replacing staff and days lost as a result of its inappropriate use are considerable. Without even considering the qualitative considerations

of officers attempting to perform duty *after* excessive use, there are the costs associated with accidents, injury and illness. Alcohol consumption was reduced by 15.4 per cent in the group. Policing in particular is recognised as a profession which participates in and condones regular, heavy alcohol use. The recent employment of a full-time Alcohol Education Officer for the Victoria Police is evidence of the growing concern and awareness of this fact. While advice was given to officers during testing about the appropriate use of alcohol as well as an article in the newsletter and other literature; with more time, programmes to more adequately address this issue could be implemented. The issue is a difficult one to address, particularly without being perceived as adopting a victim-blaming approach to inappropriate drinking behaviour. In the future, long term strategies need to be adopted which will more adequately address the issue of alcohol education in the Victoria Police.

Dietary habits were significantly improved, with meat, egg, take-away meals and salt consumption decreasing, while the frequency of frying food decreased and the use of low-fat dairy products increased. Similar improvements in dietary habits were found in a large worksite study involving 49,781 men conducted by the World Health Organisation European Collaborative Group in 1983 (Sallis, et al., 1986). The overall diet score in the present study was reduced by 26.2 per cent. The frequency of eating cakes and biscuits was the only dietary parameter which did not improve significantly. An estimated 55 to 60 per cent of all deaths in Australia are caused by diseases at least partially related to our diets (Dietary Guidelines For Australians, 1986). These diseases include cancer, diabetes, hypertension, liver disease, heart disease and stroke. A poor diet high in fat can also contribute to obesity, which in turn is related to many of the preceding mentioned diseases. It is interesting to note that officers in this study, despite exposure to the frequently cited barriers associated with operational police work, such as shift work, time constraints and availability of healthy food, were still able to significantly improve their diets.

Similarly, physical exercise levels for the group increased by 18.8 per cent. Half the group had moderate to high levels of exercise in T1, compared to 73.4 per cent in T2. Officers graduate from the Academy to the *mostly* sedentary operational environment, with its occasional and unpredictable bursts of intense physical activity. An increase in the activity levels of officers is one of the most important findings of the study, signalling a reversal to some extent of the negative changes which generally occur after graduation. Increasing exercise levels obviously increases fitness levels. If officers were fitter, they would be generally more effective and have more energy for their life away from work. Importantly, regular exercise also helps maintain proper body fat levels by expending energy, and has been shown to aid in decreasing stress and increase one's ability to cope with stressful situations (Schofield, 1989). Regular exercise has also been shown to have positive effects on hypertension, high cholesterol, coronary heart disease, cigarette smoking, diabetes, asthma, anxiety and aggression (Hight, 1989).

## Health And Fitness Survey

The Health and Fitness Survey (Appendix C {1}) was comprised of questions on cigarette smoking, stress, sleeping patterns, level of satisfaction at work, perceived fitness level, preferred times to exercise, current and desired sporting and recreation activities, and several other lifestyle questions. The survey was used not only to determine programme effectiveness, but also to assist in programming, particularly in terms of participants' needs and interests.

Officers reported feeling 8 per cent fitter after the programme and there were 8 per cent more officers who thought they were fitter than the rest of the community. Nine per cent of officers thought they were fitter than members of their own rank. Subjective feelings of increased physical fitness are an important finding of the study, and it can reasonably be expected to lead to a subsequent increase in physical functioning. There was also a 22 per cent increase in the number of officers who considered themselves to be above average or well above average fitness for their own rank. It is also interesting to note that almost 1 in 10 officers thought they were *less fit* than the community.

After the programme, there was a large increase in the number of officers who reported exercising in the street or park, suggesting that they became more aware that it was not necessary to outlay a large sum of money to increase fitness. This finding may indicate that officers were participating in activities such as walking and bike riding, which cost very little, are enjoyable and which need minimal equipment. Officers were also prepared to pay less money for activities after the programme, possibly indicating a general shift away from exercising at commercial facilities. As many as 84 per cent of the group, however, said they would be willing to contribute to the cost of activities run at work. Therefore, not only were officers indicating a greater reluctance to pay money to gain fitness, they were by way of contrast reporting a preparedness to pay for activities run at work. Three-quarters of the officers surveyed said they generally preferred to exercise with other people. This finding is supported by Yardley (1987), who asserts that particular attention should be paid to enjoyment and socialisation in workplace programmes, which are powerful motivators and reasons for maintaining exercise.

Officers reported that having access to (physical fitness) facilities at work, having more leisure time, and having access to less expensive facilities would encourage them to exercise more. These three reasons are very similar to those found in a study by Romsa and Hoffman (1980), where supply factors, lack of time, and cost were the most common reasons for not getting more exercise. Also significant, is the fact that officers work shift work, often putting them at odds with the community; and that their leisure time is often utilised to recover from the shifts worked (de Ridder, 1988). Intuitively, if officers had more leisure time or if they felt better during their leisure time, they would in turn be more likely to engage in health-benefiting activities. If the results of this programme can be generalised to other law enforcement agencies, future programmes offering activities at work should be well accepted, with 97% of officers in this study indicating that they would participate. These findings demonstrate the importance of designing the programme to suit the specific needs and situations of law enforcement officers.

Several reasons for not getting more exercise were given, with a lack of time being the most common (55.6 per cent). While the respondents report and may even believe that these are the reasons for their non-participation, it could be argued that such justifications relate more to a lack of motivation than anything else. Whatever the reasons, it is clear that many people find it difficult to maintain regular exercise, and the principles and theories of behaviour change need to be more closely examined (Haag, 1987). Also, the influence of situational and environmental factors are critical determinants in influencing the adoption and maintenance of regular exercise (Lee and Owen, 1985). Another important finding of this study in terms of future exercise adherence relates to the misconception officers had about the sacrifices needed to gain fitness. After the programme, officers believed more strongly that they did not have to forego as much to lead an enjoyable life.

### **Fitness Assessment**

Overall the results of the Fitness Assessment were encouraging with significant improvements in a number of parameters. Each assessment took an average of one hour to complete with one-to-one input from the researcher to explain the results. While the Risk Screening Clinic was a test of cardiovascular health, the Fitness Assessment was an indication of officers' physical ability to perform operational duties. In any future programme or study of this type, there is an important role for professional one-to-one fitness assessments as a means of not only assessing fitness for operational duty, but also providing motivation and confidential guidance by qualified staff.

Percentage body fat decreased significantly within the group. Importantly, there is a direct linear relationship between body fat, blood pressure, and the prevalence of hypertension (Kincaid-Smith, 1983). It could be hypothesised that because lean body weight increased significantly, participants increased their physical activity levels in combination with dietary modification to have achieved increases in muscle mass.

Hamstring and lower back flexibility did not improve significantly. These measures are important in terms of lower back care and subsequent health (insurance) claims and absenteeism. Future programmes should focus more adequately on improving the general flexibility of the target population. Abdominal strength however, did increase significantly, which will ultimately have positive affects on the incidence of lower back problems in the future (Jacobson, 1987). Dominant and non-dominant grip strength increased significantly, which has potential benefits for the many physically demanding tasks associated with law enforcement, particularly in restraining offenders.

Spirometry results were invalidated by the airflow being impeded in the flow-head. However, the measurements obtained provided valuable feedback and acted as a learning aid, particularly for smokers who were often able to quantitatively and graphically see a deterioration in their lung function. The detrimental effects of cigarette smoking were then discussed and highlighted, and in some cases, the spirometry test may have acted as an impetus for the officer to quit smoking.

Both systolic and diastolic blood pressure in Group 2 (Fitness Assessment) decreased significantly during the programme (-4.65 mm Hg and -5.28 mm Hg respectively). The reduction in systolic pressure is in direct opposition to the findings at the Risk Screening Clinic where systolic pressure increased. As previously discussed, the reasons for this disparity are not known. However, reductions in blood pressure as measured at the Fitness Assessment will result in less heart disease and stroke, leading to better health, less disability, more productivity and less absenteeism (Australian College of Occupational Medicine, 1990).

Aerobic capacity improved slightly in the group. Of significance however, is the fact that those whose aerobic capacity was considered poor in T1, improved their score by 10 per cent, indicating that less fit officers were able to make significant changes. Aerobic capacity is important not only in terms of long term health, but also in terms of being able to adequately perform the physical aspects of law enforcement.

### **Programme Activities**

The programme consisted of activities conducted between measurements made at the Risk Screening Clinic and Fitness Assessment (1989-1990). The programme included the project launch, fruit promotion, Healthy Breakfasts, Healthy Barbecues, exercise promotion (tennis, ten-pin bowling, golf, cricket, Jump Rope For Heart and exercise circuit), the Stop Smoking and Stress Management Seminars and the facility analysis.

The project launch was conducted at the Nunawading Police Station, which was the Headquarters for "Y" District. By attracting as much media attention as possible, the launch was successful in raising the profile of the study, both within the district and force wide. The launch was perceived as critical in commencing the study in the most appropriate way.

The activities conducted formed an integral part of the study, providing a forum for the researcher to communicate relevant health and fitness messages. For example, the fruit promotion was an important activity because it was the first conducted within the district. At this stage, many police officers were still unaware of the purpose and duration of the study. The fruit promotion was therefore used more as a medium to create interest within the district, giving the researcher the opportunity to meet and discuss the study with officers. The reactions from several officers initially were almost one of disbelief, as the concept of health promotion at the station level was totally new. However, this type of simple activity proved to be an effective mechanism in striving to achieve the overall aims of the study. Other activities such as the golf and tennis days formed an integral part of the study, with the specific purpose of increasing involvement in sporting and recreational activities being achieved.

## Seminars

Three formal health seminars were conducted within the district. The Smoking Seminar was poorly attended because of inadequate communication and promotion within the district. Those officers who attended the seminar offered very positive feedback by completing a short evaluation questionnaire. To ensure better attendance in the future, it is recommended that more notice is given and written confirmation of officers' intentions to attend is obtained. The two seminars conducted were less elaborate and somewhat abbreviated versions of extensive stop smoking programmes. This was the intention of the researcher, and was designed to not only act as a forum for officers to obtain information which would enable them to choose the most suitable option for them to quit smoking, but also to assist them in knowing *how* to quit. It is recommended that in future workplace programmes within the Victoria Police, officers are provided with the opportunity to attend in-house courses based on the government run "Quit Program" at a small cost to themselves.

The detrimental health effects of passive smoking have previously been highlighted. Employees and managers need to accept the fact that as with excessive noise or harmful chemicals, smoking is a health risk (Goldman, 1990), both for smokers and non-smokers. It must be highlighted that the rights issue of smokers relates more to the right of all employees to work in a safe environment, as opposed to whether some employees have a right to smoke at work (Goldman, 1990).

Despite the introduction of a total ban on cigarette smoking in all police buildings, vehicles, boats and aircraft from the 1st January, 1989, widespread disregard of this policy was evident during the study within the pilot district. The feedback received from many officers was that the ban on cigarette smoking was frequently ignored, particularly in police vehicles, causing much discomfort and animosity amongst officers. The level of adherence within the target district varied from station to station, and appeared to be dependant upon the attitude of the Officer in Charge towards the ban. It is recommended that future programmes pay considerable attention to policy adherence and education strategies to reduce the number of smoking employees.

While there is sometimes a stress management component to internal police courses conducted, this seminar was the first of its kind open to *any* officer who was desirous of attending. The written and verbal feedback obtained regarding the seminar demonstrated its value to participants. In particular, most officers stated they liked the relaxation exercise and the practical tips on coping with stress which was given by the Force Psychologist. The decision to conduct the seminar away from the police environment to avoid (any) possible hesitancy of officers to attend proved to be sound.

## Evaluation Survey

At the completion of the programme, an Evaluation Survey was circulated to all officers who were part of the target population. Participants and non-participants were asked to complete an evaluation survey because the study hoped to influence even those officers who did not participate, through peer influence and erosion of the prevailing organisational norms. In general, the results of the survey demonstrated that such an impact did occur.

The Evaluation Survey provided several questions which attempted to find out why some officers chose not to participate in initial testing. Although at the outset officers expressed concern over career reprisals and breaches of confidentiality (of results), by the end of the study, such concerns were barely mentioned, and *there was not one complaint regarding a breach of confidentiality.*

Communication between the researcher and officers in the target district during the study was obviously a problem. Almost one-quarter of Evaluation Survey respondents said communication needed to be improved. As has already been alluded to, due to not having an accurate list of personnel in the district, combined with an inadequate distribution system, communication with officers tended to be poor. In the future, it is recommended that mailing lists are computerised and activities are planned further in advance.

Officers were asked to respond regarding the affect of the programme on several health and fitness parameters. These parameters included awareness of health and fitness issues; amount of self-care; diet; exercise; weight reduction; well-being and self-image. Perceptions of the program's effect was very positive, and provides powerful evidence of the *perceived* effects of the study on police officers within the district.

The self-reported improvements in morale and work performance as a result of the study were considered to be significant. Morale is a recurrent issue within the Victoria Police, and this finding helps establish the worth of the study. Self-reported improvements in work performance are also important from a management perspective, who, understandably expect a return-on-investment. The fact that 90 per cent of officers thought the study was worthwhile and that it should be extended state wide is a significant endorsement.

## Sick Leave/WorkCare

An analysis of sick leave usage by high and low risk officers within the target population demonstrates increased sick leave usage by high risk employees. This finding is supported by other studies which also found that high risk employees were absent more often (Athanasou, 1979; Jones, 1987; Jones, Bly and Richardson, 1990). Those officers with elevated cholesterol, triglycerides, and coronary risk; were heavy drinkers, or physically sedentary, used more sick leave than those who were not. Every high risk parameter (except triglycerides  $\geq 2.0$  mmol/L) saw increases in the use of sick leave. The identification of asymptomatic diseases such as high blood pressure in high risk employees

is a positive and desired outcome of the study. By highlighting existing problems, the identification of health risks has been accelerated. In other words, rather than the problems surfacing in the future in the form of prolonged illness, disability or death, they have been identified through the screening process, enabling corrective action to be taken with the assistance of an education programme.

It is not unusual for studies to record initial increases in sick leave/WorkCare, and this fact was highlighted when the proposal to conduct the present study was initially presented to Force Command. An increase in absenteeism occurred in a similar programme undertaken by the California Highway Patrol in 1982. A study by Haynes (1978) also showed that the labelling of patients as being "hypertensive" resulted in increased absenteeism from work, rising by 5.3 days (or 80 percent) per employee per year. Medical usage by employees can also be expected to increase, as was found in a programme consisting of extensive physical examinations undertaken in the United States (Wood, 1975). However, there normally exists "*...a long period of time between behaviour change and changes in the frequency and severity of illness or injury in the experimental population*" (Chapman, 1987, p. 218), meaning that changes in sick leave in a pilot study of short duration may not always be evident. The results of the present study appear to indicate that this assertion is not always accurate.

The effectiveness of the present study has been demonstrated by the overall decrease in the use of sick leave/WorkCare usage compared to previous years and the rest of the state. While sick leave and WorkCare usage *increased* for the entire Force, sick leave in "Y" District increased slightly, and WorkCare in fact decreased considerably. This means a difference of 1.1 days per officer per year between "Y" District and the rest of the state, equating to a saving in wages of approximately \$44,416. It is clear that if a pilot study could achieve these savings, despite the realisation that there were many individuals who were identified as high risk and who took extra sick days, a permanent programme could conceivably have an even greater impact on absenteeism. If the programme had achieved similar results state wide, a total saving of 10,890 working days would have occurred, at a financial saving of almost \$1.7 million.

## General Discussion

Once officers within the pilot district had grasped the ideals of the study, a "wave of enthusiasm" appeared to occur. It is possible that the pervasive culture of the organisation which exists within many law enforcement agencies increased officers' adoption of the study. This so-called culture is an international phenomenon, creating a bond and esprit d'corps between police from all over the world. The organisational culture of the Victoria Police within this international footing is a formidable influence on the prevailing norms of officers. These norms of course, can have either a negative or positive influence on the health behaviour of the individual officer. An example of a negative influence on behaviour is the misuse of alcohol, while an example of a positive influence on behaviour

could further explain the ready adoption of the present study by officers. It is also recognised that peer influence is intimately related to officers' participation patterns. When a programme becomes part of the culture or organisational philosophy, it prospers and in the long term derives even better results than those capable of being achieved in a short pilot study.

At the start of the study, politics and prolonged explanations designed to reassure officers about the confidentiality of results, reduced the amount of time that could be committed to programme planning and implementation. Despite these explanations and reassurances, generally there was initially a degree of reluctance on the part of many officers to participate, and must have remained as a major inhibiting factor reducing participation. It is recommended that future programmes of this nature ensure that confidentiality is guaranteed and advertised accordingly, as a single breach of confidentiality could easily destroy the credibility of the entire study. One strategy to address the confidentiality and participation issue is the incorporation of health promotion concepts and *practices* within the administrative philosophy and structure of an organisation, which reinforces programme participation and maintenance of behaviour change (Lovato and Green, 1990).

Research in health behaviour has been largely undertaken by those concerned with the aetiology and prevention of disease. Different social and cultural environments give people varying frames of reference through which to view health behaviour which in turn create different standards for evaluating it (Anderson, Davies, Kickbusch, et al., 1988). These researchers have been preoccupied with the body and its maintenance, and not with emotional or social dimensions of health. More specifically, employee health is affected by economic realities at the time, their domestic situation, their level of education and knowledge, the amount of spare time they have, their underlying beliefs and attitudes, and the prevailing norms at work.

### **Strengths, Weaknesses and Limitations of the Study**

In conducting the study, it was realised from the outset that the concept of workplace health promotion would have to be "sold" to officers within the target district. As previously discussed, considerable scepticism and suspiciousness surrounded the study initially. These concerns primarily arose from fear of reprisals from the department because of poor results, and secondly confidentiality of results. These factors may have had an unknown, concealed affect on the overall results of the study, thereby, creating a weakness in the present study. However, the same weaknesses may also be perceived as a strength of the study; because despite the fears some officers held, participation rates and behaviour change were significant.

The limitations of the study are related to the research caveats previously presented in Chapter 1 (Introduction). In true experimental designs, most threats to internal validity are controlled by subjects being randomly assigned to experimental and control conditions

(Steckler, 1989). However as previously discussed, random assignment is often not feasible in real life situations. According to Steckler (1989), internal validity is threatened when competing explanations for results cannot be ruled out. While several threats to the internal validity of research exist; for example methodology, instrumentation, regression (of measured parameters), self selection, attrition and interactions (Chapman, 1987); qualitative evaluation can test the internal validity of quantitative design (Steckler, 1989). It could be hypothesised that in the present study, the qualitative data generated from police officers who completed the Evaluation Survey, adequately tested for a Type III error (i.e. a weak intervention). Simply stated, the positive responses to the Evaluation Survey supported the findings that the study had a significant effect on the health and fitness status of the target population, and that it was not necessarily as a result of unknown external factors.

The issue of self selection should also be considered when evaluating the affect of the present study. Voluntary health promotion programmes are sometimes criticised because they only attract the "worried well", and those most in need of assistance do not seek it. However, anecdotal evidence and the impressions of the researcher do not support this assertion. For example, those officers who volunteered for screening *and* fitness testing, tended to have worst results than those who volunteered for screening alone. Also, many officers who chose not to participate at all were asked their reasons for not doing so. Almost without fail, these officers did not perceive a need to participate and were generally highly physically active.

The long term effects of the present study cannot be determined because of its short duration. Behaviour change for example, once initiated, is not necessarily maintained when a programme is removed or decreased in intensity. For example, according to self-efficacy theory, an intensive promotional campaign aggressively doing things *to* a target population will cause only short term change because the change will be attributed to the external agents, rather than the employees themselves (Abrams, Elder, Carleton, et al., 1986). Therefore, long term follow-up of participating officers is required to determine if permanent behaviour change has been achieved. For example, in a follow-up by Forster, et al. (1988), the weights of 149 participants were measured one year after treatment. Participants had regained an average of 75 per cent of the weight they had lost during treatment. Only 21 per cent maintained their immediate post-treatment weight or continued to lose weight.

In conducting the study and related to the preceding weaknesses, the following threats to the external validity of the study are apparent. The present study was limited to law enforcement officers, who are atypical of the "average employee" in terms of the tasks they are required to perform, their shifts worked, and their exposure to work stress. Generalisations to other sectors of the community based on results achieved in this study may therefore be difficult. On another level, this study was limited to a metropolitan police district in the Eastern suburbs of Melbourne. The assumption that officers working in this district are representative of all officers working state wide may be erroneous.

## **Implications for Future Research**

An important consideration of this study is its relatively short duration. In comparison with overseas programmes which are evaluated between two and five years, the study has been run over a very short period of time. Intermediate objectives can be expected between years one and two of a programme - such as morale, absenteeism trends, and increases in participation. Long term objectives can be expected between years three and five - such as cost/benefit analysis, productivity and cost containment of health care costs (WorkCare) (Cantlon and Carter, 1987). These stated time frames for intermediate and long term objectives make the results obtained during the present study very significant, primarily because successful programmes generally need "soaking time" so that they may become integrated and consolidated into the psyche of employees.

It is clear for workplace health promotion programmes to be effective, the services must be taken to the officers, rather than compelling officers to go to the programme. To this end, it is apparent that suitably qualified personnel need to be at the coalface in terms of implementing workplace health promotion programmes. District Physical Education Officers (PEOs) as they may be called, would conduct regular fitness testing and counselling of officers under their responsibility, co-ordinate regular medical examinations, as well as conduct regular lectures within the district. Qualified personnel would be able to organise district activities aimed at improving the overall health and fitness of officers, therefore increasing their effectiveness as police officers. Activities, similar to those conducted during the pilot study, and the regular running of these seminars would have obvious benefits. Seminars on smoking cessation, stress management and nutrition would have far-reaching benefits for employees and the Force as a whole. Officers would have direct access to professional help, wherever they may be in the state.

Similarly, the general feeling about the Mobile Risk Screening Clinic was that it considerably enhanced participation rates. Many officers stated that they would not have travelled to the Police Hospital for a second test at the end of the programme. The reality was that shortages in human resources and station vehicles also made this more difficult. It is therefore recommended in the future that mobile services are utilised wherever possible, and is naturally a logistical necessity for country districts.

Related to these issues is the problem of communication, which was significant during this study. Once again, this problem could have been partly overcome if a central (updated) data base had been available. The communication problem was highlighted by the officers themselves in the Evaluation Survey. In considering the future design and administration of programmes, careful appraisal should be made of communication and marketing strategies. The fact that so many officers (89) left the district during the course of the study contributed to the communication problem.

## **Conclusions**

This study of the effectiveness of a pilot workplace health promotion programme on the health and fitness status of Victoria Police officers, resulted in the following eight conclusions.

**1. The results show that the study achieved significant positive changes in several health and fitness parameters of police officers within the pilot district.**

Improvements were demonstrated in dietary habits, physical exercise frequency, aerobic capacity, abdominal strength and grip strength. Significant reductions occurred in coronary risk status, cigarette smoking, alcohol consumption, absenteeism, blood pressure and body composition. Officers reported that the study had a significant affect on their self-image, self-care, work performance and station morale. The majority of officers in the pilot district thought the study was worthwhile, and that it should be extended state wide.

**2. It is hypothesised that the reason police officers improved their health status significantly is that in the past they have been physically fit and healthy, and were more aware of their poor state of health and physical fitness.**

It is hypothesised that officers were more ready to change because of their past health and fitness status. Officers were readily able to make comparisons between their previous very good fitness levels and their poor (present) physical levels. Upon graduation from the Academy, officers are usually physically fitter than they have ever been before. However, within a very short time, a significant deconditioning process begins, and within a few years, physical fitness has severely regressed. It is hypothesised that this deterioration in physical fitness "planted a seed of incongruency" in the minds of officers; comparable to cognitive dissonance. More specifically, officers remembered how they use to look, feel and (physically) function, and compare that level of functioning to their present level. It is conceivable that many officers perceived the present study as an ideal opportunity to initiate a healthy lifestyle which they once enjoyed.

**3. That the organisational culture pervasive within law enforcement agencies contributed to the mass change towards health enhancing behaviour, and hence health and fitness status.**

Once a programme is part of the organisational culture, positive health initiatives and appropriate behaviours will become self-reinforcing. Officers displaying health-endangering behaviour will come to be repudiated by their peers, as was demonstrated during this study.

**4. An alternative explanation for the positive findings demonstrated during this study could be a corollary motivated by fear.**

It is possible that officers in the pilot district felt "under the microscope" as a result of screening and testing. This feeling of increased scrutiny and accountability may have influenced the decision of some officers to participate or to change their lifestyles for the better, fearing reprisals at a later stage for not doing so.

**5. That an individual's health status is not solely the result of individual action, or at least actions for which they have total control and choice.**

An ecological understanding of health, which clearly places the individual within a social, cultural and physical environment is the central concept of workplace health promotion.

**6. In order to meet the demands of the 1990s, the Victoria Police will need to introduce policies and strategies that help to maintain its officers in the peak physical condition at which they graduate.**

Failure to introduce programmes like the present study force wide may have the effect of condoning and normalising existing negative lifestyle practices. The community also has a justified expectation that those employed to protect them and maintain the peace are physically capable.

**7. The community expects police to maintain a high physical standard which will enable them to perform the tasks of law enforcement more adequately for their entire careers.**

Because of these requirements, it is not unrealistic to assume that police should be generally fitter and healthier than the general population. It appears however, as a result of this and previous research, that a substantial number of Victoria Police personnel have sub-standard health and physical fitness levels.

**8. The potential benefits of health promotion research in the workplace occur at the organisational as well as the individual level.**

The popular maxim, "People are an organisation's most valuable resource," is particularly relevant to the Victoria Police. Improvements in officer's health and fitness will result in major benefits to the Victoria Police. These benefits include improvements in morale, productivity and job satisfaction. Changes in individual risk factors will result in reduced risk of developing premature heart disease, stroke, cancers and diabetes. A decline in injuries and their subsequent costs is also likely. Staff turnover will also decrease.

Improvements in self-esteem, self-image and general appearance can also be expected. A Force with higher morale will be more efficient. Most importantly, improving the health of officers while they are employees of the Victoria Police means they are more likely to enjoy a longer and healthier life in retirement.

**9. Many unanswered questions remain about the most effective way of conducting health promotion strategies at the workplace.**

While many issues relating to programmes conducted within a law enforcement agency were resolved, there are many issues still remaining for general programmes, such as the most effective methodology, maintaining programme momentum, communication techniques to encourage high levels of participation, and the permanence of observed health parameters (Fielding, 1987).

## **Recommendations for Future Research**

The following recommendations are proposed as a result of the findings of this study, and are presented as general and specific recommendations.

### **Specific Recommendations**

1. The Victoria Police should implement a state wide health and fitness programme based on the format of the present study. A two year voluntary period should precede compulsory health screening and fitness testing after all appropriate administrative processes are in place.
2. Regionalised Physical Education Officers should be employed with responsibility for health and fitness promotion and testing of 1,000 personnel each.
3. A comprehensive computer Health Management System be utilised to ensure accurate record keeping and more effective communication. An individual's specific health and fitness data should remain confidential.
4. As there is only intermittent compliance with the smoking ban, there is a need to implement the following:
  - (a) enforcement of the ban state wide in all police buildings and vehicles;
  - (b) continued education of all employees about the policy and its purpose;

- (c) education of all managers (especially Officers in Charge) in relation to the smoking ban and the Victorian Occupational Health and Safety Act, 1985, its effects, and consequences of non-adherence;
- (d) establishment of a formal reporting mechanism and discipline arrangement to deal with breaches of the policy;
- (e) regular smoking cessation programmes, with appropriate reward contingencies, (e.g. time off from work to attend); and
- (f) consideration being given to making non-smoking an appointment criteria, as is the case with many law enforcement agencies in the United States.

5. Further investigation is warranted in areas which directly and indirectly affect employee health. Issues such as protection against occupational hazards, the manipulation of current shift working patterns, providing incentives in integrated return-to-work programmes for long term WorkCare claims and flexible recreation leave.

6. That screening and fitness testing procedures are further standardised in future studies, so that the validity and reliability of results can be enhanced.

7. That a post study follow-up of participating subjects occur so that the long term effectiveness of the study can be determined.

8. That any future programmes conducted within the Victoria Police strive to create new social norms regarding health related behaviour, which will in turn enhance the health and fitness of all employees.

9. That future workplace health promotion programmes combine both quantitative and qualitative evaluation methods. Qualitative methods, which include such things as case studies of individual employees or workplaces (in the case of multiple sites), may be used to complement quantitative methods. This type of evaluation can be helpful in determining *what* activities occurred, *why* they occurred, and *who* was exposed to them (Steckler, 1989).

### **General Recommendations**

1. That research continue in the area of workplace health promotion, specifically to address the following: (a) cost-effectiveness (b) evaluation methods (c) accessibility of services, and (d) enhancing participation of employees in programmes. In particular, it is felt that due to the increasing pressure on programmes to clearly demonstrate their cost-effectiveness, a standardised methodology should be developed which will enable researchers to consistently determine the financial value of their programmes.

2. That workplace health promotion programmes, particularly in law enforcement agencies, ensure that the services offered are as accessible as possible taking into account shift work, time constraints and lack of resources.
  
3. That future workplace health promotion programmes focus on the state of wellness, rather than disease, death and disability.

# **Appendices**

▲ WHITTLESEA.

ICT - HEIDELBERG

'Y' DISTRICT - MAROONDAH

▲ HURSTBRIDGE.

▲ DIAMOND CREEK.

● IFFENSBOROUGH.

XA ELTHAM.

▲ EAST WARRANDYTE.  
▲ BERG.  
▲ DE.

● X  
● DONCASTER.

● X  
● NUMAWADING.  
● X  
● BOX HILL. ● X  
● RINGWOOD.

▲ BURWOOD.

▲ MT. Waverley.  
● X  
● GLEN Waverley.

● X  
● SPRINGVALE.  
● X  
● DANDENONG.

▲ DOVETON.

▲ HEALESVILLE.

▲ YARRA GLEN.

XA LILYDALE.

● X  
● MOOROOLBARK.

▲ CROYDON. ▲ MT. EVELYN.

▲ BAYSWATER.

▲ OLINDA.

● BORONIA.

● X  
▲ FERNTREE GULLY

▲ MONBULIK.

▲ BELGRAVE.

▲ EMERALD.

▲ WARBURTON.

▲ YARRA JUNCTION.

INE.

NATION

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**LIST OF POLICE STATIONS/SECTIONS IN "Y" DISTRICT**

**Police Stations**

Bayswater	Nunawading
Belgrave	Olinda
Boronia	Ringwood
Box Hill	Warburton
Burwood	Yarra Glen
Croydon	Yarra Junction
Emerald	Traffic Operations Group
Ferntree Gully	Criminal Investigation Branch Divisions
Healesville	C.I.B.      Box Hill
Lilydale	Croydon
Marysville	Ferntree Gully
Monbulk	Lilydale
	Nunawading
	Ringwood
Mooroolbark	Community Policing Squad
Mt. Evelyn	District Support Group (Nunawading)

**"OPERATION PHYSICOP"  
HEALTH AND FITNESS SURVEY**

Welcome to "Operation Physicop". This survey consists of a number of questions about your health and fitness. Section 1 is related to your health and Section 2 is related to your fitness and exercise habits.

Please complete the following information and answer all the questions to the best of your ability.

POLICE NO: \_\_\_\_\_

PERSONAL DETAILS

Surname: \_\_\_\_\_

Christian Names: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Address: \_\_\_\_\_ P/Code: \_\_\_\_\_

Phone: (H) \_\_\_\_\_

Rank: \_\_\_\_\_ District: \_\_\_\_\_

Location: \_\_\_\_\_

Years Service \_\_\_\_\_

SECTION 1 - HEALTH

1. If you have given up smoking what were the main reasons for giving up?  
Circle your response -

- a) Expense
- b) Concern for future health
- c) Ill health at the time of giving up
- d) Social Pressure/ to please someone else
- e) Pregnancy
- f) Just wanted to give up
- g) Other (specify).....

2. Are you interested in Stop Smoking Programs? YES/NO

There are a number of questions that require you to place a cross somewhere along the line in response to the question. Do not circle the words at the end of each line. An example of a correct response is shown:

\_\_\_\_\_X\_\_\_\_\_

Very appropriate Inappropriate

GO ON TO THE NEXT PAGE NOW AND ANSWER THE QUESTIONS

3. How would you describe your health?

\_\_\_\_\_

Not very good Very good

4. How well did you sleep last night?

\_\_\_\_\_

Very poorly Very well

5. How easily do you lose your temper these days?

\_\_\_\_\_

Not at all Very easily

6. How impatient are you these days?

\_\_\_\_\_

Not at all Very impatient

7. How would you rate the level of stress at work?

\_\_\_\_\_

Low High

8. How would you rate the level of stress at home?

\_\_\_\_\_

Low High

9. How satisfied are you at work?

\_\_\_\_\_

Not at all Very satisfied  
satisfied

10. Are you currently (circle correct letter)

- a) married
- b) single
- c) defacto
- d) widowed
- e) divorced
- f) separated

11. Do you have children? YES/NO

12. If you have children, do you experience difficulty finding childcare?  
YES/NO

13. Does your spouse work? YES/NO

If yes.....Fulltime day Y  
 .....Parttime day Y  
 .....Shiftwork fulltime Y  
 .....Shiftwork partime Y

(circle response/s)

14. Do you presently work shiftwork? YES/NO

15. How many hours overtime did you work last fortnight?.....

16. How many hours overtime do you generally work?.....

17. How many times do you eat the following foods per week?  
 (circle responses)

	Everyday	4-6 times	Less than 4
(a) Whole grain cereals	Y	Y	Y
(b) Whole grain bread	Y	Y	Y
(c) Unprocessed bran	Y	Y	Y
(d) Fresh fruit	Y	Y	Y

**SECTION 2 FITNESS AND EXERCISE**

Answer these questions the same as you did previously - i.e place a cross somewhere along the line. Do not circle the words at the end.

18. How physically fit do you feel at the moment?

\_\_\_\_\_

Very unfit Very Fit

19. How would you rate the amount of physical activity you perform at work?

\_\_\_\_\_

Very little Very active

20. How would you rate the amount of physical activity you perform during your leisure time?

\_\_\_\_\_

Very little Very active

21. How would you rate your fitness compared to the community?  
 (Circle your choice)

Well below Average      Below Average      Average      Above Average      Well above Average

22. How would you rate your fitness compared to other members of your rank?  
(circle your choice)

Well below Average	Below Average	Average	Above Average	Well above Average
-----------------------	------------------	---------	------------------	-----------------------

23. How often do you think a person needs to exercise per week to keep fit?

- a) Most days
  - b) About 3 times a week
  - c) About once a week
  - d) Or less often than that
- (circle letter)

24. How long do you think a person should exercise on each occasion?

\_\_\_\_\_

25. If you participate in sport or exercise, where do you usually do it?  
(circle the letter/s)

- a) Home
- b) Sport/Recreation facility
- c) Work
- e) In the street/park
- f) Police Academy
- g) Other (specify) \_\_\_\_\_

26. Where would you like to participate in sport or exercise?  
(circle the letter/s)

- a) Home
- b) Sport/Recreation facility
- c) Work
- e) In the street/park
- f) Police Academy
- g) Other (specify) \_\_\_\_\_

27. Do you generally like to exercise..... a) alone  
b) with other people

28. Would you like to join a sports or exercise club? YES/NO

29. When would you be most likely to participate in a health and exercise program? (Number each group separately in order of preference - i.e. group A, 1 to 7 and group B, 1 to 4)

A  
Monday  
Tuesday  
Wednesday  
Thursday  
Friday  
Saturday  
Sunday

B  
Before Work  
Lunch break  
After work  
Evenings

30. Are there any local community resources that would assist in implementation of the program? Examples may be horse riding schools, swimming pools, etc.

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31. Which would you say would be most likely to encourage you to take more exercise. (Circle Y for Yes as many times as you like)

- More information about local facilities.....Y
- Other people to do things with.....Y
- Arrangements for childcare at leisure facilities.....Y
- Better local facilities.....Y
- More information about benefits of exercise.....Y
- More leisure time.....Y
- Less expensive facilities.....Y
- More parks and green spaces.....Y
- Availability of a medical check beforehand.....Y
- Cheaper or more frequent public transport.....Y
- Access to facilities at work.....Y
- More things suitable for all the family.....Y
- Others (please specify) \_\_\_\_\_

---

32. Would you participate in health and fitness programs if they were provided at work?

YES/NO

33. Would you be willing to contribute to the cost of one or more of the programs?

YES/NO

34. What is the most you would be willing to contribute for an activity run three times per week? (Circle one)

- Nil
- \$2 per week
- \$5 per week
- \$10 per week
- \$20 per week
- \$30 per week
- \$40 per week

35. Do you know of anyone, including yourself who may like to instruct or run any activities?

YES/NO

If yes, please include their names, type of activity, and a phone or other contact \_\_\_\_\_

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36. Write your answers in each of the four columns provided if you are involved in any of the activities listed. If you do not currently participate in them, do not write anything opposite the activity.

ACTIVITY	AVE. FREQUENCY (How often per week)	AVE. TIME OF WORKOUT IN MINUTES	LEVEL OF EXERTION? "E" easy "M" moderate "H" hard	HOW MANY MTHS/YRS HAVE YOU ENGAGED IN THIS ACTIV.?
<b>RECREATION</b>				
Hiking.....	.....	.....	.....	.....
Windsurfing.....	.....	.....	.....	.....
Motorcycling.....	.....	.....	.....	.....
Cooking.....	.....	.....	.....	.....
Gardening.....	.....	.....	.....	.....
Pool/snooker.....	.....	.....	.....	.....
Reading.....	.....	.....	.....	.....
Camping.....	.....	.....	.....	.....
Photography.....	.....	.....	.....	.....
Craftwork.....	.....	.....	.....	.....
Other (specify)....	.....	.....	.....	.....
<b>SPORT</b>				
Tennis.....	.....	.....	.....	.....
Badminton.....	.....	.....	.....	.....
Squash.....	.....	.....	.....	.....
Football/soccer...	.....	.....	.....	.....
Hockey.....	.....	.....	.....	.....
Basketball.....	.....	.....	.....	.....
Netball.....	.....	.....	.....	.....
Golf.....	.....	.....	.....	.....
Waterskiing.....	.....	.....	.....	.....
Snowskiing.....	.....	.....	.....	.....
Table tennis.....	.....	.....	.....	.....
Fishing.....	.....	.....	.....	.....
Other (specify)....	.....	.....	.....	.....
<b>TRAINING</b>				
Jogging.....	.....	.....	.....	.....
Briskwalking.....	.....	.....	.....	.....
Cycling.....	.....	.....	.....	.....
Swimming.....	.....	.....	.....	.....
Aerobics.....	.....	.....	.....	.....
Weighttraining...	.....	.....	.....	.....
Martial Arts.....	.....	.....	.....	.....
Other (specify)....	.....	.....	.....	.....
Hiking.....	.....	.....	.....	.....
<b>OTHER</b>				
Stretch/yoga class	.....	.....	.....	.....
Stressmanagement.	.....	.....	.....	.....
Weightcontrol....	.....	.....	.....	.....
Drug/Alcohol class	.....	.....	.....	.....
Dieteducation....	.....	.....	.....	.....
Timemanagement...	.....	.....	.....	.....
Yoga.....	.....	.....	.....	.....
Other (specify)....	.....	.....	.....	.....

37. Now go back to the list above and circle those activities you would like to participate in. Circle as many as you wish.

38. What would you say are the main reasons for you not getting more exercise? (Circle either "Y" or "N")

	YES	NO
I'm not the sporty type.....	Y	N
I haven't got time.....	Y	N
I've got young children to look after.....	Y	N
I'm too shy or embarrassed.....	Y	N
My health is not good enough.....	Y	N
There's no-one to do it with.....	Y	N
I can't afford it.....	Y	N
I'm too old.....	Y	N
I have an injury or disability that stops me.....	Y	N
There's no suitable facilities nearby.....	Y	N
I need to rest and relax in my spare time.....	Y	N
I don't have time because of my work.....	Y	N
I might get injured or damage my health.....	Y	N
I don't enjoy physical activity.....	Y	N
I haven't got the right clothes or equipment.....	Y	N
I'd never keep it up.....	Y	N
I'm overweight.....	Y	N
I haven't got the energy.....	Y	N
Other.....		
.....		
.....		

Once again, place a cross somewhere along the line to indicate your response to the question. Do not circle the words (i.e. Agree Strongly)

39. To lead a really healthy life you have to give up lots of things you enjoy.

\_\_\_\_\_

Disagree Strongly Agree Strongly

40. Taking part in sport and physical activities helps you to meet people

\_\_\_\_\_

Agree Strongly Disagree Strongly

41. Regular exercise helps work off your tensions

\_\_\_\_\_

Disagree Strongly Agree Strongly

42. Only those who play sport need to exercise to keep fit

\_\_\_\_\_

Agree Strongly Disagree Strongly

43. Regular exercise has no effect on your weight

\_\_\_\_\_

Disagree Strongly

Agree Strongly

44. Exercise is good for your appearance

\_\_\_\_\_

Agree Strongly

Disagree Strongly

45. Fit people enjoy life more

\_\_\_\_\_

Disagree Strongly

Agree Strongly

46. Most people do enough in their everyday lives to keep themselves fit

\_\_\_\_\_

Agree Strongly

Disagree Strongly

47. People who haven't always been active should not take up exercise

\_\_\_\_\_

Disagree Strongly

Agree Strongly

Thank you for your co-operation in completing this survey

**"OPERATION PHYSICOP"  
INFORMATION SHEET FOR GRADED FITNESS TEST**

**1. Explanation of the Graded Fitness Test**

You will perform a graded fitness test on a bicycle ergometer. The exercise intensities will begin at a level you can easily accomplish and will be advanced in stages, depending on your functional capacity. We may stop the test at any time because of signs of fatigue or you may stop whenever you wish to because of personal feelings of fatigue or discomfort. We do not wish you to exercise at a level which is abnormally uncomfortable for you; however, for maximal benefit from the test, exercise as long as is comfortable.

**2. Risks and Discomforts**

There exists a remote possibility of certain changes occurring during the test. They include abnormal blood pressure, fainting, disorders of heart beat, and in very rare instances, heart attack. Every effort will be made to prevent these by careful monitoring during the test. Should you feel any symptoms or discomfort of any kind, indicate this to us and we will terminate the test immediately.

**3. Results**

Your results are confidential and will only be used by the Physical Health Unit for the purpose of data analysis. Results from the Risk Screening Clinic will also be made available to the Physical Health Unit for the purpose of data analysis.

**4. Inquiries**

Any questions about the procedures used in the graded fitness test or any other test are encouraged. If you have any doubts or questions, please ask for further explanation.

**5. Medical Supervision**

Your cardiovascular risk factor and medical history do not indicate a need for a physician to be in attendance during this fitness test.

**6. Freedom of Consent**

Your permission to perform this graded fitness test (and any other test) is voluntary.



**"OPERATION PHYSICOP"  
PERSONAL HISTORY SHEET**

Please answer the following questions by circling the correct response. If you answer YES to any question, please specify any relevant details.

1. Has your Doctor ever said you have heart trouble?  
YES/NO.....If yes, specify \_\_\_\_\_  
\_\_\_\_\_
2. Has your Doctor ever said you have high blood pressure?  
YES/NO.....If yes, specify \_\_\_\_\_  
\_\_\_\_\_
3. Has your Doctor (or other specialist) ever told you that you have a bone or joint problem?  
YES/NO.....If yes, specify \_\_\_\_\_  
\_\_\_\_\_
4. Do you ever have pain in the chest?  
YES/NO.....If yes, specify \_\_\_\_\_  
\_\_\_\_\_
5. Do you ever feel faint or have spells of severe dizziness?  
YES/NO.....If yes, specify \_\_\_\_\_  
\_\_\_\_\_
6. Is there any physical reason why you should not follow an activity program even if you wanted to?  
YES/NO.....If yes, specify \_\_\_\_\_  
\_\_\_\_\_
7. Are you over 35?  
YES/NO.....If yes, specify your age \_\_\_\_\_
8. Are you unaccustomed to vigorous exercise?  
YES/NO.....If yes, specify how long it has been since you exercised regularly (i.e. 3 times a week) \_\_\_\_\_  
\_\_\_\_\_
9. Are you presently taking any medication, drugs, or tablets?  
YES/NO.....If yes, specify (and for what reason) \_\_\_\_\_  
\_\_\_\_\_

**"OPERATION PHYSICOP"  
CONSENT FORM**

I, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
(NAME) (RANK) (NO.)

acknowledge and agree that I: -

- (a) Have read and understand the Information Sheet
- (b) Have truthfully and accurately completed the Personal History Sheet
- (c) Consent to participating in this study and the conduct of all relevant tests
- (d) Consent to my results from the Risk Screening Clinic being made available to the Physical Health Unit
- (e) Consent to data relevant to myself being used for statistical or research purposes by the Physical Health Unit. I understand my anonymity is assured.

\_\_\_\_\_  
(Signature)

\_\_\_\_/\_\_\_\_/\_\_\_\_  
(Date)

SURNAME: \_\_\_\_\_ INITIALS: \_\_\_\_\_ DISTRICT: \_\_\_\_\_  
 RANK : \_\_\_\_\_ STATION: \_\_\_\_\_  
 AGE : \_\_\_\_\_ Years SEX : MALE / FEMALE

**MEASUREMENTS:**

HEIGHT	: _____	cm	WEIGHT:	_____	kg
TRICEP	: _____	mm			
PECTORAL	: _____	mm	FLEXIBILITY (SIT & REACH):	_____	cm
ABDOMINAL	: _____	mm			
ILLIAC	: _____	mm	ABDOMINAL STRENGTH :	_____	
SUBSCAPULA	: _____	mm			
THIGH	: _____	mm	GRIP STRENGTH R	_____	kg
WAIST	: _____	cm		L _____	kg
WRIST	: _____	cm			
BODY FAT	: _____	%			
LEAN BODY WT.	: _____	kg			
IDEAL BODY WT.:	_____	kg			

<b>SPIROMETRY</b>	- PRE	VC	_____	FEV1	_____	PERCENT	_____	%
	- POST	VC	_____	FEV1	_____	PERCENT	_____	%
	- PREDICTED	VC	_____	FEV1	_____	PERCENT	_____	%

**PWC**

REST	:			HR	_____	BP	_____
1ST WORKLOAD:		_____	KPM	_____	HR	_____	BP
2ND WORKLOAD:		_____	KPM	_____	HR	_____	BP
3RD WORKLOAD:		_____	KPM	_____	HR	_____	BP
RECOVERY 1M :				_____	HR	_____	BP
2M :				_____	HR	_____	BP
3M :				_____	HR	_____	BP

PREDICTED V02 : \_\_\_\_\_ L/M (ABSOLUTE)  
 V02 : \_\_\_\_\_ ML/KG/MIN (RELATIVE)  
 PREDICTED MAX.HR. : \_\_\_\_\_ Beats/Min.  
 TARGET HR. ZONE : \_\_\_\_\_ Beats/Min.

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Dear Member,

"Operation Physicop" has been operating in Golf and Foxtrot Districts (the old "Y" District) now for almost 12 months. The response from members has been excellent, and is very encouraging.

This research project is particularly relevant to modern day policing where the demands of the job are great, both physically and mentally. By its very nature, policing often exposes members to a lifestyle which is not conducive to optimal health and fitness; "Operation Physicop" addresses this issue.

"Operation Physicop" is a unique opportunity for you to become involved and interested in your own health and well-being. The data generated by this project will remain strictly confidential and will only be used for the purpose of data analysis and interpretation.

The Department of Sport and Recreation and the Victoria Police Force, and all participating staff, in conjunction with the Victoria Police Association would like to thank you for your support and participation in this most worthwhile project.

Tom HOGG  
Director General

Kelvin GLARE  
Chief Commissioner  
Victoria Police

Bryan J. HARDING  
Secretary  
Police Association

**"OPERATION PHYSICOP"**

**EVALUATION**

This evaluation form is a vital part of the evaluation process, and will help project officers measure the effectiveness of the program. Please complete the following questions as completely and honestly as possible. Your answers will remain strictly confidential.

Thank you for your assistance.

Please complete the following:

Age ..... years

Male / Female (Circle one)

Years of Service ..... years

Rank .....

1. Please tick any of those activities you participated in last year, i.e. 1989.

- (a) Risk Screening Clinic
- (b) Fitness Assessment
- (c) None of the above

2. If you ticked (c), please indicate why you did not participate (tick one or more).

- (a) Not interested
- (b) Lack of opportunity
- (c) Insufficient time
- (d) I was concerned about the confidentiality of the project
- (e) I was concerned information could be used to affect my career
- (f) I was on recreation or other leave
- (g) I was sick and/or injured
- (h) I didn't know about it
- (g) Other (please specify)

3. (a) "Operation Physicop" has conducted several activities over the last 12 months. Please circle the appropriate response(s).

	Did you hear about?	Did you attend?
Aerobics and/or aquaerobics at Academy	YES / NO	YES / NO
Nutritious barbeques	YES / NO	YES / NO
Stress Management Seminar	YES / NO	YES / NO
Smoking Seminar	YES / NO	YES / NO
Jump Rope for Heart Skipping Program	YES / NO	YES / NO
Healthy Breakfasts	YES / NO	YES / NO
Golf day	YES / NO	YES / NO
Tennis day	YES / NO	YES / NO
Indoor Cricket	YES / NO	YES / NO
Ten Pin Bowling	YES / NO	YES / NO
Horse Riding	YES / NO	YES / NO

(b) If you did not attend the Risk Screening Clinic, please comment why.

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(c) If you did attend the Risk Screening Clinic, but did not attend the Fitness Assessment, please comment why.

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(d) If you did not attend the Risk Screening Clinic, or the Fitness Assessment, but did attend other "Operation Physicop" activities, please comment why.

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4. Have you received copies of the "Operation Physicop" Bulletin/Newsletter? If you respond no, go to question 7.

Yes

No

5. (a) Did you read the Bulletin(s)?

Yes

No

(b) How many Bulletins have you read? (Please tick one).

1

2

3

4

5

6

6. Did you find the Bulletin informative? (Circle a number, for example if your answer is "sometimes", circle number 3).

Never \_\_\_\_\_ Always

1      2      3      4      5

7. Did you view the "Operation Physicop" Health and Fitness Booklet, which provided information on local health and fitness centres?

Yes  No

8. Did you receive any free/complimentary passes to local health and fitness centres offered by Physicop? If no, go to question 10.

Yes  No

9. If you did receive a pass, did you attend a centre?

Yes  No

If yes, which centre(s)?

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10. Have you joined a fitness centre in the last twelve months?

Yes  No

If yes, which one? (Specify actual centre name).

---

11. If you are not a member of a fitness centre, in the last 12 months have you attended a centre on a casual basis? If no, go to question 13.

Yes  No

If yes, which one? (Specify actual centre name).

---

12. How often do you attend?

- Daily
- 3-5 Weekly
- 1-2 Weekly
- Less than Weekly

13. Through what medium did you find out about "Operation Physicop" programs/activities? (Tick more than one if appropriate).

- Physicop Bulletin/Newsletter
  - Posters around station
  - Direct mail
  - VDU Message
  - Police Life
  - Notice Board
  - Station Read-Outs
  - Word of Mouth
  - Press/Local Media
  - Fax
  - Other (please specify) \_\_\_\_\_
- 

14. In what way do you think "Operation Physicop" has helped you? (Circle number).

(a) More aware of health and fitness issues.

Did not at help all \_\_\_\_\_ Helped very much

1      2      3      4      5

(b) More aware of my own health and fitness.

Did not help at all \_\_\_\_\_ Helped very much

1 2 3 4 5

(c) Motivated me to take more care of myself.

Helped very much \_\_\_\_\_ Did not help at all

1 2 3 4 5

(d) Changed my diet for the better.

Did not help at all \_\_\_\_\_ Helped very much

1 2 3 4 5

(e) Exercise more regularly.

Helped very much \_\_\_\_\_ Did not help at all

1 2 3 4 5

(f) Helped me lose weight.

Helped very much \_\_\_\_\_ Did not help at all

1 2 3 4 5

(g) Improved my well-being.

Did not help at all \_\_\_\_\_ Helped very much

1 2 3 4 5

(h) Improved self-image.

Did not help at all \_\_\_\_\_ Helped very much

1 2 3 4 5

If you have not given up or reduced smoking in the last 12 months, or you have never smoked go to question 17.

15. Has "Operation Physicop" motivated/helped you to give up smoking?

Yes  No

16. If you have not given up, has "Operation Physicop" motivated/helped you to cut down the number of cigarettes smoked?

Yes  No

If so, by how many approximately per day? \_\_\_\_\_

17. In what way do you think this project has increased your work performance?

Did not help at all \_\_\_\_\_ Helped very much  
1 2 3 4 5

18. In what way do you believe Physicop has had a positive effect on morale at your station?

Did not help at all \_\_\_\_\_ Helped very much  
1 2 3 4 5

19. How do you think "Operation Physicop" could be improved? (Tick more than one if appropriate).

More activity days

More breakfasts/barbeques

More seminars on health (i.e. stress, nutrition, etc.)

More activities run at work (i.e. skipping)

Better communication

More literature circulated on health and fitness

Other (please specify)

20. Do you think it has been a worthwhile project?

Yes

No

Undecided

Please offer comments.

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21. Would you like to see this program extended Statewide?

Yes

No

Undecided

22. If you have any additional comments (positive and/or negative) regarding the project, please use the space below. All comments are welcome.

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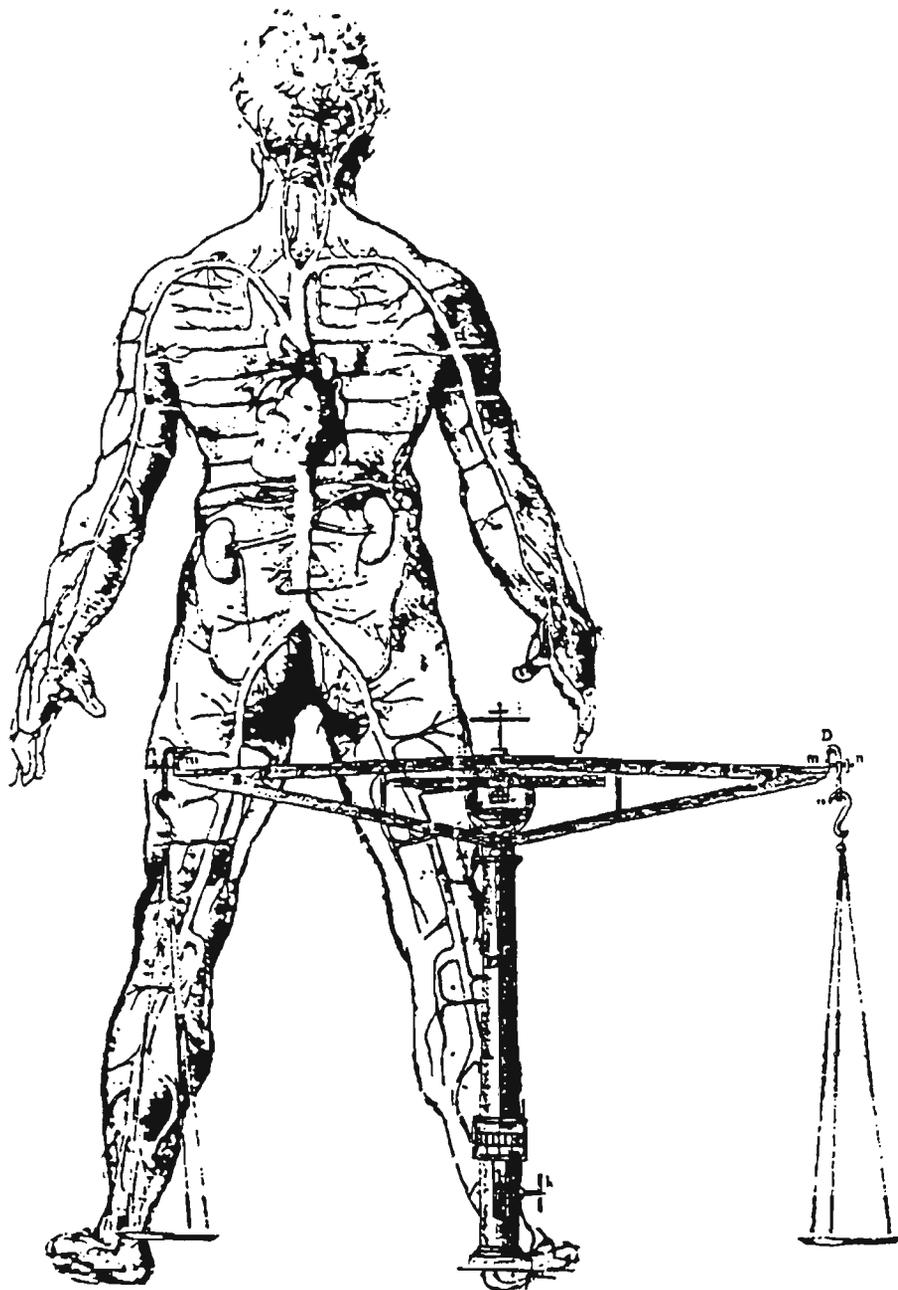
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**THANK YOU FOR YOUR ASSISTANCE**



# "OPERATION PHYSICOP"

## FITNESS ASSESSMENT INFORMATION



FITNESS ASSESSMENT INFORMATION

WHY BE PHYSICALLY FIT?

One of the essential components of HEALTH is PHYSICAL FITNESS. Fitness is measured not simply by strength or muscular development but mainly by the capacity of the heart and lungs to deliver oxygen and blood to the tissues (i.e. oxygen consumption). The heart and lungs of a fit person will be able to deliver more oxygen and blood to the tissues and perform a given amount of work with less stress and exertion. Fitness characterized by a feeling of well being, lower cardiac risk profile, improved work efficiency and assists in coping with stress.

The main components of fitness are:-

- \* Cardiovascular endurance (oxygen consumption)
- \* Muscular strength
- \* Muscular endurance
- \* Flexibility

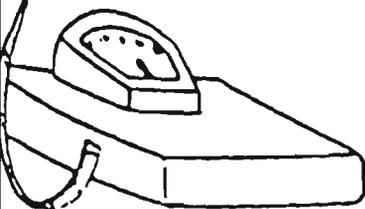
Regular physical activity (Aerobic) will:-

- \* Lower resting heart rate
- \* Increase available oxygen supply to tissues
- \* Contribute to a decrease in blood pressure
- \* Contribute to a decrease in blood lipids
- \* More efficiently redistribute blood
- \* Aid in decreasing body fat

Fitness can refer to a number of areas:

- \* Aerobic fitness is the ability of the heart, lungs and blood vessels to deliver oxygen to working muscles. The greater the level of aerobic fitness, the greater the level of stamina achieved.
- \* Flexibility or suppleness refers to the range of movement of a joint and muscles surrounding it. Good flexibility promotes correct posture and means reduced injury risk.
- \* \* Muscular strength also promotes correct posture as it provides greater support for the skeleton, allowing you to carry out normal tasks with less effort.

The assessment you have undergone gives a good indication as to your body's ability to function efficiently. The results give an indication of your level of personal fitness.



Outlined within are explanations of your:

- Body Fat Analysis
- Blood Fat Levels
- Blood Pressure
- Target Heart Rate
- Lung Function Test
- Aerobic Fitness Assessment
- Strength and Flexibility



BODY FAT

Body weight has traditionally been used as a measure of fatness. However, there are two components of body weight; (i) lean body mass which includes muscles, bones, blood and organs, and (ii) body fat. Body weight can be misleading as a measure of fatness because it doesn't distinguish between lean body mass and body fat. It is the percentage of body weight which is fat, called percentage body fat, which is important.



Skinfold measures allow us to estimate your percentage body fat. A skinfold measure is simply the thickness of a pinch of skin and underlying fat, measured with the aid of specially designed calipers. Men and women tend to store fat in different places and the body sites at which skinfolds are measured differ accordingly.

Your percentage Body fat is \_\_\_\_\_ %  
 Your ideal weight is \_\_\_\_\_ kg

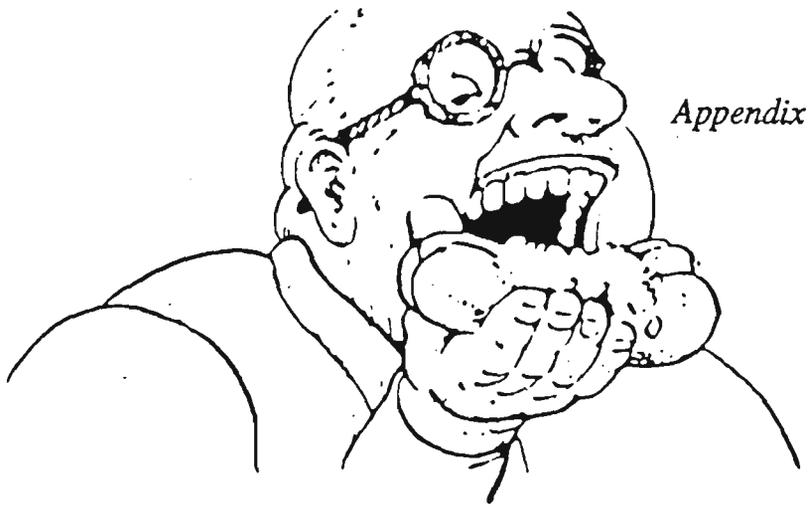
Weight Control —  
 It feels good!

Percentage body fat (%)	Women	Men
How you rate		
Low fat	14.0 - 16.9	<12
Ideal	18.0 - 20.0	12.0 - 16.0
Average	20.0 - 23.9	16.0 - 20.0
Above Average	24.0 - 26.9	20.0 - 25.0
High Fat	27.0 →	25.0 →

If necessary, your score can be used in conjunction with your body weight to determine what you should weigh. Remember that a certain amount of fat is necessary for normal body function.

Body composition is important to good health for a number of reasons. Excess body fat is associated with a number of disease states, including the cardiovascular diseases, high blood pressure, diabetes and arthritis.

Excess fat increases the energy requirement for most everyday tasks, and body systems are forced to operate at higher levels and greater stress than should be necessary. Raised stress levels can lead to breakdowns of various body systems, and poor health.



## BLOOD FAT LEVELS

Cholesterol and triglyceride are fats which circulate in the bloodstream. Blood fat levels, measured in millimoles per litre of blood (mmol/l), are determined by analysis of blood samples. A certain amount of these fats is necessary but if present in high concentrations they can pose a serious health threat.

### Cholesterol

Cholesterol has been associated with coronary heart disease since it was first discovered in the fatty deposits of artery walls affected by arteriosclerosis.

Artherosclerosis is the major cause of coronary heart disease. It is a degeneration of the inner lining of the artery walls, characterised by deposits of fatty substances containing a high percentage of cholesterol. This leads to a narrowing of the artery and a reduction in the oxygen carried to the tissues. Artherosclerosis increases the risk of blood clotting (thrombosis) which can block a large artery. A heart attack occurs when the arteries supplying the heart are narrowed or blocked. A stroke occurs when the arteries supplying the brain are obstructed.

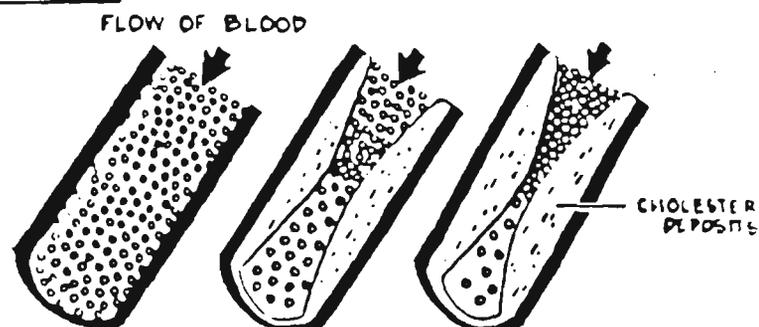
### High Density Lipoprotein

There is some debate regarding the significance of high levels of cholesterol in the blood. There are two types of cholesterol; high density lipoprotein (HDL) and low density lipoprotein (LDL). LDL tends to form deposits on the inner walls of the arteries, this being a central factor in heart disease, whereas HDL appears to remove cholesterol from the tissues. It is therefore argued that, while contributing to a higher overall cholesterol level, the presence of high levels of HDL in the blood may in fact be desirable. On the basis of existing evidence, the National Heart Foundation of Australia has nominated 0.9 mmol/l as the level below which HDL may be considered to be undesirably low.

Your total cholesterol (mmol/l) \_\_\_\_\_

How you rate

Ideal	<5.5
Average	5.5-6.5
Elevated	6.5-7.5
High	>7.5



The "average" range represents the average values of the Australian population. Since Australians consume a high cholesterol content in their daily diet, "average" Australian values cannot therefore, be considered safe or acceptable.

### Triglycerides

Triglycerides are another type of normal fat in the blood. Elevated levels are more common in the overweight and inactive and often accompany elevated cholesterol levels. Blood triglyceride levels are influenced by the amounts of refined sugar, saturated fats and alcohol in the diet.

There is still a degree of uncertainty as to whether elevated triglyceride levels increase the risk of heart disease. Regular monitoring and control of triglyceride levels is however, highly recommended.

Your triglyceride level (mmol/l): \_\_\_\_\_

How you rate	(mmol/l)
Ideal	<0.8
Average	0.8-2.0
Elevated	>2.0

### BLOOD PRESSURE

Blood pressure is simply the force the blood exerts against the walls of the arteries. The measured blood pressure is usually expressed as a double number, for example 120/70. The first of these two numbers reflects the pressure within the arteries in millimetres of mercury (mmHg) when the heart contracts. This is the measured systolic pressure (120 in the example). The second number represents the pressure when the heart is between beats. This is the measured diastolic pressure (70 in the example).



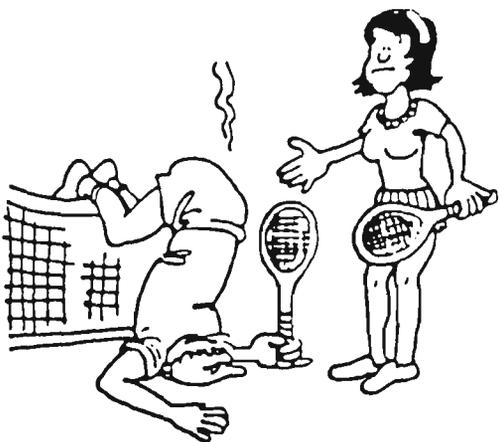
With specific reference to high blood pressure, only about ten percent has a detectable physical cause (e.g. kidney disease), the other 90 percent, called essential hypertension, has no readily identifiable causes. Essential hypertension seems to be inherited, therefore people whose parents had high blood pressure are more likely to develop it than those individuals whose parents did not. The appearance of high blood pressure is largely determined by a number of environmental factors such as excessive salt and fat intake, pregnancy, certain medications overweight and stressful lifestyles.

The most common problem with blood pressure is high blood pressure. However, most people with high blood pressure will display no unusual symptoms. Many high blood pressure sufferers may complain of headaches, fatigue, anxiety and tension, but these symptoms are also common in the general population and may result from a variety of causes.

Your blood pressure (mmHg): \_\_\_\_\_ Station \_\_\_\_\_ Hospital \_\_\_\_\_

There are a number of things that you can do to prevent and rectify high blood pressure.

1. Reduce your salt intake - do not add salt to your food, before or after cooking. Avoid highly salted foods such as pickles, potato chips, sausage rolls, etc.
2. Reduce your weight - consult a qualified individual for a well balanced, nutritious diet, low in refined sugars, salt and fat.
3. Get regular and appropriate exercise.
4. Reduce your alcohol consumption.
5. Reduce the stresses in your life, and/or modify your lifestyle to cope with the remaining ones more effectively.
6. Reduce your cigarette consumption.
7. If you happen to be on birth-control medication, have your blood pressure checked at least twice a year.



The main function of the lung is to transport air in and out of the body. Oxygen is absorbed into the blood in exchange for carbon dioxide which is produced during metabolic activities by various body tissues. This vital function maintains life.

Three aspects of lung function are measured:-

1. Forced Vital Capacity (FVC), is the total amount of air that can be expired from the lungs in one full expiration.
2. Forced Expiratory Volume/second (FEV1), is the volume of air that can be forcibly expired in one second.
3. Forced Expiratory Volume % (FEV%), expresses the volume of expired air in one second as a percentage of the forced vital capacity.

<u>SPIROMETRY</u>	-	PRE EXERCISE FVC	_____	FEV1	_____	PERCENT	_____	%
	-	POST EXERCISE FVC	_____	FEV1	_____	PERCENT	_____	%
	-	PREDICTED FVC	_____	FEV1	_____	PERCENT	_____	%

Lung volumes are positively related to height and negatively related to age. In respiratory disorders such as asthma, chronic bronchitis, chronic obstructive airways disease and emphysema, the FVC, the FEV1 and the FEV% are significantly reduced. Heavy smokers over a long period of time show reduced lung function.

The forced vital capacity is about 5.0 litres in a healthy young man and about 3.2 litres in a healthy young woman. Athletes may have higher values, and older people have lower values.

The forced expiratory volume in one second is about 4 litre for a healthy young man and about 2.5 litres for a healthy young woman.

The forced expiratory ratio of a normal subject is usually between 70 and 85%. Subjects with obstructive airways disease or asthma exhibit reduced expiratory ratios.



TARGET HEART RATE

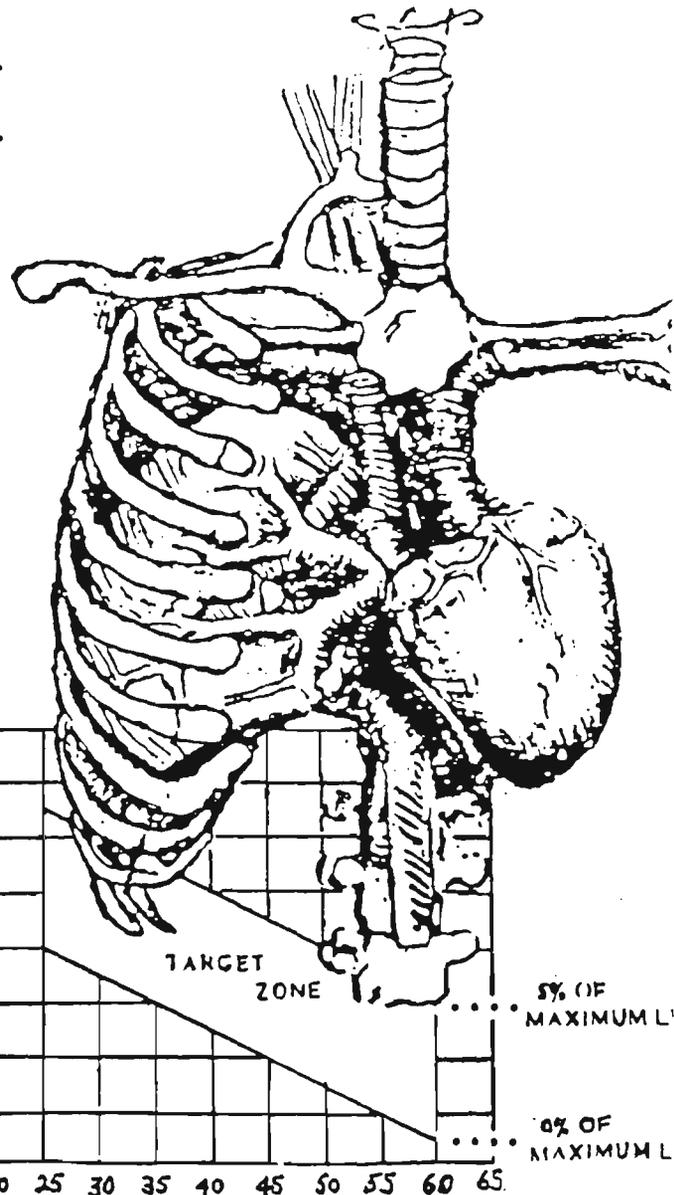
Target heart rate depends on a range of important considerations; including your present exercise patterns (how active/inactive and for how long). The importance of Target Heart Rate (THR) calculation must not be overlooked by anyone associated with health and fitness activities as it represents a safe way of working towards better health and fitness.

THR calculation provides the heart rate range in beats per minute (bpm) at which you can safely exercise and expect some fitness benefits from your activity. In order to increase endurance or aerobic fitness it is necessary to maintain an activity of sufficient intensity to elevate your heart rate into the target heart rate zone for a minimum of twenty minutes at least three times per week.

A typical aerobic fitness program will entail 20 to 30 minutes of continuous exercise, three or four days per week. Intensity is the key variable to increased fitness, and heart rate provides a convenient means to monitor exercise intensity. Aerobic fitness will not increase unless your heart rate during exercise is raised to a least a predetermined minimum level. This level is your target heart rate and is approximately 60% to 75% of your maximum heart rate, (maximum heart rate is approximately 220 minus your age).

Min. level \_\_\_\_\_ beats min.  
 Max. level \_\_\_\_\_ beats min.

It is also important to consider that as we grow older our THR decreases to enable us to protect ourselves from the dangers of over-exertion. This is only a guide. Obvious signs of over-exertion at any age include dizziness, arm and chest pains, feelings of nausea, paleness and poor muscular control. If any of these signs appear, or, if the activity is too painful to continue-SLOW DOWN OR STOP. All participants should also be cautioned against overtraining.



During exercise, blood performs the functions of transporting oxygen and nutrients to the working muscles, and removing waste products. Since the rate of activity in muscles can increase 100 times during exercise, the heart, circulatory and respiratory systems may be faced with a severe challenge. The heart supplies more blood by both pumping faster and increasing the amount of blood pumped with each beat. At the same time, more oxygen has to be moved from the air into the lungs.

The rate at which the body is able to take up and use oxygen from the air is called oxygen consumption. Since energy is produced in the body tissues by breaking down fuel in the presence of oxygen, this reflects the amount of work being performed. The maximum amount of oxygen that can be taken up by the body (maximum oxygen uptake) determines the maximum amount of work that can be maintained.

Presuming that the lungs are healthy, and that a large muscle mass is being used, such as in running, or cycling, the limit to the amount of oxygen that the body can take up lies in the heart's ability to pump blood. Just like any other muscle in the body, the heart will increase in size and strength if it is used (hypertrophy), and decrease in size and strength if it is not used (atrophy). The result of an inactive life is, therefore, a steady drop in the amount of oxygen the body is capable of taking up. If you follow your exercise prescription an increase in Oxygen Consumption will occur. This results in a more efficient cardiovascular system and an increased sense of well being and vitality.

Maximum oxygen uptake figures can be used:-

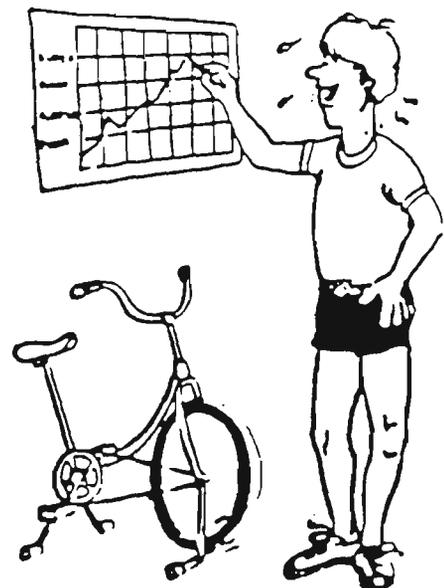
- \* As an indication of the amount of activity in the subject's life style.
- \* To predict some aspects of performance capability.

There is also a genetic factor involved.

Since most activities involve moving body weight, maximum oxygen uptake is usually expressed on a weight basis, thus:

Oxygen consumption = millilitres of oxygen  
per kilogram of body  
weight per minute.

Expressing oxygen uptake this way also accounts for size differences between people.



How you rate (ml/kg/min): \_\_\_\_\_

Appendix C {7}

	Poor	Fair	Average	Good	Excellent
<b>Women</b>					
20-29	<28	29-34	35-43	44-48	>49
30-39	<27	28-33	34-41	42-47	>48
40-49	<25	26-31	32-40	41-45	>46
50-65	<21	22-28	29-36	37-41	>42
<b>Men</b>					
20-29	<38	39-43	44-51	52-56	>57
30-39	<34	35-39	40-47	48-51	>52
40-49	<30	31-35	36-43	44-47	>48
50-59	<25	26-31	32-39	40-43	>44
60-65	<21	22-26	27-35	36-39	>40

**STRENGTH AND FLEXIBILITY**

The extent to which you maintain your muscle function in terms of strength and flexibility depends on the extent to which you use those muscles. If a muscle is not regularly being used, it weakens and loses elasticity. In fact, poor muscle function is thought to be the cause of more than eighty percent of lower back pain.

All strength and flexibility measures are specific to the muscle group being tested. The test of abdominal, or stomach strength, and the "sit and reach" test involving trunk flexion are designed to detect inadequacies in the function of the large muscle groups which are associated with the lower back. To minimise your risk of lower back pain you must aim to have strong stomach muscles and good flexibility in the muscles which attach to the spine.

**Abdominal Strength Test**

(Sit-up Test)

Your abdominal strength: \_\_\_\_\_

How you rate

- Stage 1 Poor
- Stage 2 Below Average
- Stage 3 Average
- Stage 4 Good
- Stage 5 Excellent.

**Sit and Reach Flexibility Test**

Your Flexibility Score: \_\_\_\_\_

How you rate	(cm)
Poor	<-5
Fair	-5-0
Good	0-+5
Excellent	>+5

**Grip Strength Ratings**

CATEGORY	MALE	FEMALE
Excellent	67 & ^	50 & ^
Good	55 to 67	43 to 50
Average	41 to 54	34 to 42
Bel.average	29 to 41	27 to 33
Poor	28 & dwn	26 & dwn

Grip Strength R. \_\_\_\_\_

L. \_\_\_\_\_

## CARDIAC RISK

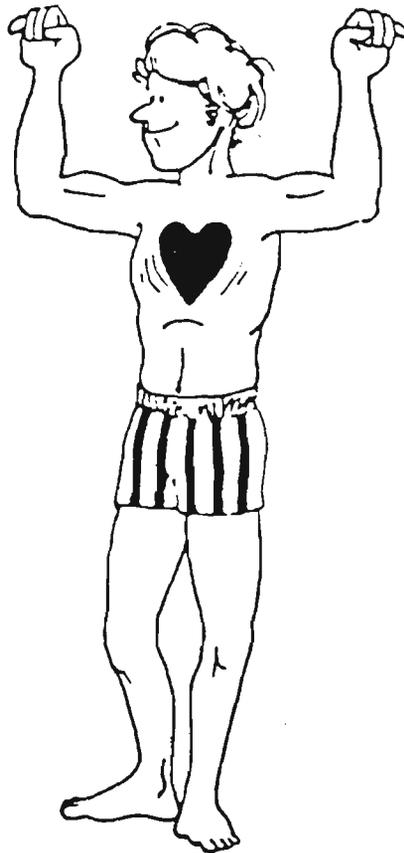
Heart disease is the single major cause of death in Australia. The risk factors associated with heart disease include age, high blood pressure and a high percentage body fat. Many of these factors are preventable or treatable once identified.

Cholesterol and triglyceride are fats which circulate in the bloodstream. A certain amount of these fats is necessary but, if present in high concentrations, they can pose a serious health threat. Blood fat levels can be reduced by minimising fat in your diet.

Regular physical activity at a prescribed level can reduce risk. To be considered physically active you must exercise at least three times per week for at least 15-20 minutes per session, maintaining your heart rate within the target range.

The risk of death from heart disease of heavy smokers is double that of non-smokers. It is reduced by giving up smoking and after ten years of not smoking it approaches that of a non-smoker.

Blood pressure is the force exerted by the blood against the walls of the blood vessels. It varies throughout the cycle of the heart beat. High blood pressure or hypertension, is a serious condition contributing to heart disease.



\* In the preparation of this booklet we wish to acknowledge the Melbourne City Baths.



Dear Member,

The Victoria Police Force and the Department of Sport and Recreation fully support the health and fitness project titled "Operation Physicop" which is about to be launched in "Y" District.

This research project is particularly relevant to modern-day policing where the demands of the job are great, both physically and mentally. By its very nature, policing often predisposes members to a lifestyle which is not conducive to optimal health and fitness; "Operation Physicop" addresses this issue.

It is now well documented that improved health and fitness leads to enormous benefits for the employee, with these benefits being passed on to the organization in terms of cost-effectiveness and efficiency.

It should be noted that individual results will not be used by the Police Department or any other agency in any way, other than for the purpose of data analysis and interpretation. The data generated by this project will remain strictly confidential and will not go any further than the project officers concerned. Your anonymity is assured.

"Operation Physicop" is a unique opportunity for you to become involved and interested in your own health and well-being. The Department of Sport and Recreation and the Victoria Police Force, in conjunction with the Victoria Police Association, fully endorse this worthwhile project and encourage all members to participate.

Phil Power  
Acting Director-General  
Sport and Recreation

Kelvin Glare  
Chief Commissioner  
Victoria Police

Bryan G. Harding  
Secretary  
Police Association



All Members  
"Y" District

Physical Health Unit  
Police Academy  
Viewmount Road  
Glen Waverley, 3150

SUBJECT: "Operation Physicop" - Health and Fitness Project to  
be Implemented in "Y" District.

---

Dear Member,

Modern policing is a demanding job, both physically and mentally. Members often sit for long periods, and can suddenly be required to perform physical tasks which can be very intense and sometimes violent. Policing can lead to poor lifestyles; including shift-work, poor sleeping and eating habits, and often involves moderate to high levels of stress.

Research has indicated that with minimal effort toward maintaining physical fitness, individuals can:-

- a) improve self image and self esteem
- b) reduce the risk of heart disease
- c) improve feelings of wellbeing
- d) increase ability to cope with stress
- e) increase energy and vitality

Research conducted into the health and fitness of police members has identified the need for comprehensive research within the Victoria Police Force. As a result, a research project called "Operation Physicop" is being implemented in "Y" district. This study is a joint project between the Department of Sport and Recreation and the Victoria Police Force.

The purpose of this project is to develop and validate a health and fitness program. It is hoped the program will improve the physical fitness and health status of police members in "Y" district. After completion, the program may be used as a model for force-wide implementation, and also used as a model by other public service organizations wishing to implement similar programs.

The project requires members of "Y" district to participate in the following tests:

1. The Risk Screening Clinic Test held at the Police Hospital, Dodds St., South Melbourne. The test includes:

- a) Height and weight
- b) Blood Pressure
- c) Blood cholesterol and triglycerides

If you have not already attended the Clinic, please make an appointment on 629 3078. Please state you are part of "Operation Physicop".

please note that fasting is necessary for the clinic, so do not eat or drink anything for six hours prior to the test (except black, sugarless tea or coffee, or water). Diabetics or other members on medication should continue as advised by their Doctor.

Please note that the Risk Screening Clinic must be completed prior to the Physical Fitness Assessment.

2. A Physical Fitness Assessment

Tests include:

- a) Percentage body fat
- b) Lung Function
- c) Abdominal Strength Test
- d) Flexibility Test
- e) Hand Grip Strength Test
- f) Physical Work Capacity Test (on bicycle)

Clothing required for testing is shorts or tracksuit, t-shirt, running shoes, towel and toiletries. Females will also require a bra or bikini-top and a loose fitting t-shirt to facilitate placement of the heart monitoring equipment. You will be notified of the time and date you are required for the assessment.

3. A written survey related to your health and fitness.

Total time for all testing will be approximately 45 minutes. Members will be invited to participate in a selection of programs (such as stress management, dietary advice, and fun runs) over 12 months focusing on health and fitness. After that period, the above-mentioned tests will be conducted again to determine the effectiveness of the program.

It must be stressed that while group data will be published (for example mean blood pressure), individual results will remain strictly confidential. The only people to see your results will be the Physical Health Unit Project Officers and staff at the Risk Screening Clinic.

The results will not be given to the department or anyone else. The results will not be used against members in any way whatsoever. This project is for your benefit as well as the department. Therefore, we strongly urge every member to participate in taking positive steps to look after your own health; you have nothing to lose.

Please ensure you bring your results sheets with you from the Risk Screening Clinic so that you may be cleared to be fitness tested.

Please direct any queries to Snr. Constable Phillip Ralph or Anne MacKinnon at the Academy on 566 9466 or 566.

Anne MacKinnon  
Project Officer

Phillip Ralph  
Snr. Const. 23691  
Project Officer



Physical Health Unit  
Police Academy  
4th September, 1989.

Dear

"Operation Physicop" Fitness Assessments have been under way for 3 weeks. A total of 117 members have participated at either Nunawading, Ferntree Gully, Lilydale or Healesville Police Stations. The response so far has been excellent and members have shown a keen interest in their health and fitness.

Now that you have attended the Risk Screening Clinic, we would like to invite you to participate in the "Operation Physicop" Fitness Assessments. We are returning to test for the last time at the following stations:-

DATES:

Nunawading Police Station

Mon. 11th September to Fri. 15th September from 9am to 6pm.

CONTACT: A/Sgt. Bob Mathieson on 871 4111.

Ferntree Gully Police Station

Mon. 18th September to Fri. 22nd September from 9am to 6pm.

CONTACT: S/Sgt Geoff Collins on 758 3333.

Lilydale Police Station

Mon. 25th September to Fri. 29th September from 9am to 6pm.

CONTACT: Res. John Pollock on 735 1066.

**Please phone the appropriate contact** to make a booking for a Fitness Assessment.

The assessment includes:

- a) Percentage Body Fat Test
- b) Lung Function Test
- c) Abdominal Strength Test
- d) Flexibility Test for hamstrings and lower back
- e) Hand Grip Strength Test
- f) Physical Work Capacity Test (on a bicycle).

You'll need a pair of shorts or tracksuit, t-shirt, running shoes, towel and toiletries. Females will also require a bra or bikini-top and a loose fitting t-shirt to facilitate placement of the heart monitoring equipment. Each test will take approximately 1 hour.

This is your last opportunity to catch "Operation Physicop" Fitness Assessments, so don't delay call NOW for an appointment.

If you have any queries, please phone Anne MacKinnon or Snr. Const. Phillip Ralph on 566 9466/566.

Anne MacKinnon  
Project Officer

Phillip Ralph  
Snr. Const. 23691



Physical Health Unit  
Police Academy

4th September, 1989.

Dear

"Operation Physicop" has been under way in 'Y' District for 3 weeks. A total of 312 members from 'Y' District have so far participated in the Risk Screening Clinic at the Victoria Police Hospital. The response so far has been excellent and members are showing a keen interest in their health and fitness.

For one reason or another, you have been unable to attend the Risk Screening Clinic. The Clinic involves the following measures:

- a) Height and weight
- b) Blood pressure
- c) Blood cholesterol and triglycerides

To make a booking at the Clinic, simply ring Helen or Pauline on 629 3078 at the Police Hospital and tell them you are from 'Y' District.

Please note that fasting is necessary for the Clinic, so do not eat or drink anything for **six hours** prior to the test (except black, sugarless tea or coffee, or water). Diabetics or other members on medication should continue as advised by their Doctor.

After completing the Risk Screening Clinic, we encourage you to then book in for a Physical Fitness Assessment consisting of the following:

- a) Percentage body fat
- b) Lung function
- c) Abdominal Strength Test
- d) Flexibility Test
- e) Hand Grip Strength
- f) Physical Work Capacity (on bicycle)

Clothing required for testing is shorts or tracksuit, t-shirt, running shoes, towel and toiletries. Females will also require a bra or bikini-top and a loose fitting t-shirt to facilitate placement of the heart monitoring equipment.

After completing the Risk Screening Clinic, you can book a test (which lasts approximately 1 hour) at the following stations:

DATES: Nunawading Police Station  
Mon. 11th September to Fri. 15th September from 9am to 6pm.  
CONTACT: A/Sgt. Bob Mathieson on 871 4111.

Ferntree Gully Police Station  
Mon. 18th September to Fri. 22nd September from 9am to 6pm.  
CONTACT: S/Sgt Geoff Collins on 758 3333.

Lilydale Police Station  
Mon. 25th September to Fri. 29th September from 9am to 6pm.  
CONTACT: Res. John Pollock on 735 1066.

Please phone the appropriate contact to make a booking for a Fitness Assessment.

It must be stressed that while group data will be published (for example mean blood pressure), individual results **will remain strictly confidential**. The only people to see your results will be the Project Officers and staff at the Risk Screening Clinic.

The results **will not** be given to the Department of anyone else. The results **will not** be used against members in any way whatsoever. This project is for your benefit as well as the Department. Therefore, we strongly urge you to participate and take positive steps in looking after your own health.

**This is your last opportunity** to catch "Operation Physicop" Fitness Assessments, so don't delay - firstly, book in at the Clinic for a test and then contact one of the members listed above for an appointment at a police station nearest you. We strongly urge you to participate - you have nothing to lose, only your health to gain.

Please bring your Risk Screening Clinic results to the Physical Fitness Assessment.

If you have any queries, please phone Anne MacKinnon or Snr. Const. Phillip Ralph on 566 9466 (or 566).

See you soon,

Anne MacKinnon  
Project Officer

Phillip Ralph  
Snr. Const. 23691  
Project Officer

15th August, 1990.

**MEDIA RELEASE**  
**OPERATION PHYSICOP**

*Media conference: 11am Wednesday, 16th August, at Nunawading police station, 401 Maroondah Highway, Nunawading.*

A group of police, of varied fitness, will be put through their exercises by Department of Sport and Recreation staff. Also present will be Mr Terry Norris, Assistant Commissioner (Research and Development), Mr Bill Robertson, and the head of the Victoria Police Physical Health Unit, Inspector Danny Bodycoat.

Over 200 Victoria Police have volunteered for a 12-month research programme, which includes aerobics classes, nutrition advice, stress management classes and fitness tests designed to improve their overall health.

"Operation Physicop" is a joint project run by the Victoria Police Physical Health Unit and the Department of Sport and Recreation's Fitness and Healthy Lifestyle Unit.

The Department of Sport and Recreation has provided funding of \$29,000 for the project.

Inspector Danny Bodycoat said the project was voluntary, and will be run in the Nunawading Police District, which takes in Box Hill to Nunawading, Ferntree Gully and Healesville.

Almost half of the district's 480 police have already volunteered to take part in Operation Physicop in only three weeks, which has delighted Inspector Bodycoat.

"Obviously people out there want to be helped, but nothing like this has been available previously," he said.

"What we are trying to do is motivate police to improve their personal health and fitness; improve morale and their work environment; and contain the costs of absenteeism due to ill health and injury," Inspector Bodycoat said.

"It is encouraging that so many people want to take part," he said.

Volunteers in Operation Physicop will start by attending the Risk Screening Clinic at the Police Hospital to be tested for blood pressure, cholesterol and triglyceride levels and their overall coronary risk.

They will then complete a questionnaire, before a comprehensive fitness test to determine body fat, lung function, physical work capacity, and heart performance.

After a 20-minute workout, they will be given comprehensive counselling on the results of their test, diet and exercise programmes.

They will then be monitored over the next 12 months by Operation Physicop's project officers, who will incorporate fitness programmes, aerobics, jogging and walking, with advice on the QUIT programme, stress management classes, diet and nutrition lectures and, when necessary, assistance from the police health and support services such as the Psychology Unit, social worker, welfare office and Police Medical Officer.

"Police generally tend to have very poor dietary habits and poor exercise routines. Until now, they have been left to their own devices, but we hope Operation Physicop will provide them with the necessary professional help to improve their overall health and fitness," Inspector Bodycoat said.

If successful, the programme will be expanded to other police districts, he said.

Mr Terry Norris, representing the Minister for Sport and Recreation, and a member of the Sport and Recreation Advisory Council, said the Department would assist Operation Physicop on a consultancy basis, as well as providing the funds to employ a project officer.

"The Department has recognised the need to improve fitness levels of all Government workers and we hope to demonstrate the benefits of improved health and lifestyles by a reduction in sick leave, improved health and fitness, and a reduction in employee turnover," he said.

"Through Operation Physicop, the Department hopes to provide a model for other Government agencies to implement similar initiatives.

"We are particularly keen to help the Victoria Police because it is a profession which relies on physical ability and good health.

"There is also strong support within the Department, which is essential for the success of any occupational health programme," Mr Norris said.

The Victoria Police has recently introduced its risk screening clinic, as well as a physical pursuit course, to provide a job-related physical test for recruits, and a magazine on health, fitness and recreation for police members.

JANE MUNDAY  
Media Director

\*\*\*The project officers for Operation Physicop are Senior Constable Phillip Ralph, and Anne McKinnon, who studied Physical Education at the Footscray Institute of Technology and who has been working in the field of employee fitness.



**How to support medical research at the Baker Medical Research Institute**

The Baker Medical Research Institute is funded from many sources including Federal and State Governments, the Baker Benefactions, investment income, research grants, corporate sponsorship and private gifts.

The field of research in which the Institute is engaged touches the lives of the entire Australian community. If research into heart disease is to succeed it will not be because of the efforts of one sector of the

community, either scientists, governments, companies or individuals, but by the combined effort of all Australians in the alleviation of a common problem and the achievement of a common goal.

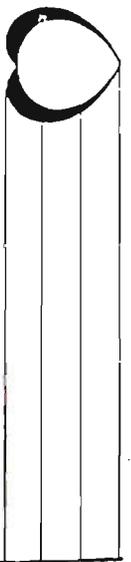
The Institute needs your help to finance its research.

There are many ways in which you can help. These include making annual or more frequent gifts; placing capital in our account on which the Institute receives interest (but not capital); making provision in your will; making a donation in lieu of a birthday gift or in memory of a loved one.

Gifts are exempt from tax

For further information contact:—

Public Relations Officer  
Baker Medical Research Institute  
P.O. Box 348  
Prahran, Victoria, 3181  
Telephone: (03) 522 4333



**SOME ACHIEVEMENTS OF THE GREATEST CLINICAL RELEVANCE**

1. Discovery of the large blood pressure lowering effect of regular exercise. This is the most successful non-drug method for treating high blood pressure.
2. A new treatment strategy for moderate/severe hypertension, where after an additional period of drug treatment, blood pressure is controlled by non-drug methods.
3. Use of certain fish-oils to lower triglycerides and keep cholesterol from rising in patients with atherosclerosis.
4. Discovery of the HDL receptor (which removes cholesterol from the cell and may lead to better treatment of established atherosclerosis).
5. A better understanding of the causation of arterial spasm underlying certain types of heart attack.
6. Development of a new device for optimal cooling of the heart in open-heart surgery.
7. Discovery of a new method for measuring sympathetic nerve function in humans. Apart from its importance in hypertension, a by-product of this work has seen improved treatment in patients with liver disease.
8. Establishment of a cardiovascular RISK SCREENING CLINIC to improve the life-style of Victoria Police members.

**RISK SCREENING CLINIC**

**RISK EVALUATION**



IN ASSOCIATION WITH  
THE BAKER MEDICAL RESEARCH  
INSTITUTE:

Victoria Police Hospital  
Dodds Street  
South Melbourne, 3205  
Tel. 629 3078 Fax. 629 7060



CLINIC ID: \_\_\_\_\_

**Welcome to the Risk Screening Clinic. By attending the clinic, you have taken the first step to reduce your risk of suffering from heart disease. An assessment of your risk factor level is the only way to determine whether you are currently at risk and if an intervention program is necessary.**

**Please complete the following information and answer all the questions to the best of your ability.**

POLICE NO: \_\_\_\_\_

PERSONAL DETAILS:

Surname: \_\_\_\_\_

Title: \_\_\_\_\_

Christian Names: \_\_\_\_\_

Address: \_\_\_\_\_

P/Code: \_\_\_\_\_ Phone: \_\_\_\_\_

Rank: \_\_\_\_\_ District: \_\_\_\_\_

Location: \_\_\_\_\_

Doctor's Name: \_\_\_\_\_

Address: \_\_\_\_\_

**PERSONAL CONSENT**  
I have read the information sheet provided and agree to undergo the tests at the RISK SCREENING CLINIC.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**SELF ASSESSMENT QUESTIONNAIRE —**  
Circle the correct response to each question or complete questions where asked.

**A. SMOKING**  
If you are a non smoker ..... 0  
— smoke a cigar or pipe ..... 1  
— smoke 10 cigs/day or less ..... 4  
— smoke 20 cigs/day ..... 6  
List actually how many you smoke per day .....

**B. ALCOHOL**  
How often do you usually drink alcohol?  
I don't drink alcohol ..... 0  
1-2 times per week ..... 1  
3-4 times per week ..... 2  
5-7 times per week ..... 3  
When you do drink, how much would you have?  
I don't drink alcohol ..... 0  
1 or 2 drinks only ..... 1  
3 or 4 drinks only ..... 2  
more than 4 drinks ..... 3

**C. DIABETES**  
Are you a diabetic YES/NO

**D. DIETARY HABITS**  
1. How many meals per week include meat, poultry (including breakfast, sandwiches, main meals)?  
a) never eat any meat ..... 0  
b) 1-7 times per week ..... 1  
c) more than 7 times per week ..... 2

2. How many eggs do you eat per week?  
a) less than 2 ..... 0  
b) 3-5 ..... 1  
c) more than 6 ..... 2

3. How often do you eat take-away meals eg. fried chicken, pies, pizza etc.?  
a) never ..... 0  
b) 1 or 2 times per week ..... 1  
c) 3 or 4 times per week ..... 2  
d) more than 4 times per week ..... 3

4. Do you add salt to food either before or after it is cooked?  
a) no ..... 0  
b) yes ..... 1

5. Do you eat cakes or biscuits on a daily basis?  
a) no ..... 0  
b) yes ..... 1

6. How often would you fry food?  
a) never ..... 0  
b) 1-2 times per week ..... 1  
c) more than 2 times per week ..... 2

7. Do you use low-fat dairy products eg. skinny milk?  
a) yes ..... 0  
b) no ..... 1

**E. AGE**  
Write down your age in years .....

Date of Birth .....

If you are less than 20 ..... 1  
20-29 years ..... 2  
30-39 years ..... 3  
40-49 years ..... 4  
50-59 years ..... 5  
over 60 years ..... 7

**F. FAMILY HISTORY**  
Has anyone in your family suffered from heart disease. YES/NO if two or more close relatives have died from heart disease  
— after the age of 55 ..... 2  
— one before and one after ..... 3  
— before the age of 55 ..... 4

**G. EXERCISE**  
If you vigorously exercise 3 or more times per week for more than 30 minutes (eg. run, jog, swim, aerobics) ..... 0  
If you moderately exercise 2-3 times a week ..... 1  
If you are physically active at work but do no regular exercise activity ..... 2  
If you are physically inactive at work and exercise occasionally ..... 3  
If you have a sedentary occupation and do no regular exercise ..... 4

**INTERPRETATION OF YOUR RESULTS**  
After completing the clinic assessment, your self assessment results will be explained to you and you will determine whether any lifestyle factors that you have control of are contributing to your risk of heart disease.

## VICTORIA POLICE HOSPITAL - RISK SCREENING CLINIC

Risk  
Evaluation  
Report

MR

Police Number:  
Clinic ID Number:  
Test Date: 29-03-1989

Risk Evaluation is the first step in reducing the likelihood of heart disease. Our evaluation consists of:

- (1) Self Assessment - which indicates factors in your lifestyle which could contribute to high risk, and
- (2) Coronary Risk Score - which is derived from the measurements of the major coronary risk factors - high blood pressure
  - blood cholesterol
  - cigarette smoking

## Risk Evaluation Results

AGE	25
CIGARETTES PER DAY	0
SELF ASSESSMENT SCORE	6
BLOOD PRESSURE (mmHg)	120/68
CHOLESTEROL (<5.5 mmol/l)	3.93
TRIGLYCERIDE (<2.0 mmol/l)	0.75
BODY MASS INDEX (<25 Kg/m <sup>2</sup> )	23
HEIGHT (cm)	183.0
WEIGHT (kgs)	76.3

Desirable Range: 66 - 83

OVERALL CORONARY RISK PERCENTILE: 3

---LOW-----AVERAGE-----HIGH---

0      10      20      30      40      50      60      70      80      90      100

When your score is compared to other Australians of the same age, the graph indicates your current level of risk. It is important to discuss your results with our staff, or your own doctor.

## CLINIC RECOMMENDATIONS

1. Cholesterol -  
Recheck cholesterol level every 5 years
2. Blood Pressure -  
Blood pressure within acceptable range
3. Cigarette Smoking -  
If you are a smoker enquire about our Quit Program.
4. Body Weight -  
If you are overweight enquire about our weight loss program.
5. Additional Comments -

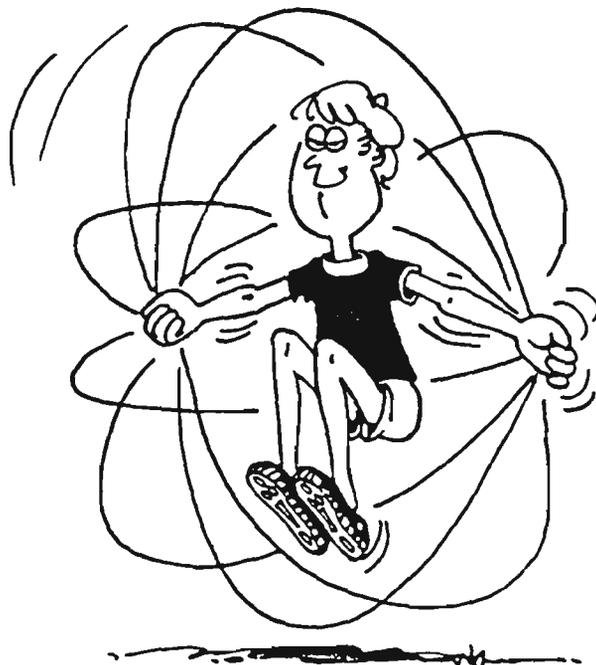


## OPERATION 'PHYSICOP' NEWSLETTER NO. 5

### JUMP ROPE FOR HEART

A fantastic effort was put in during the Jump Rope for Heart skipping program. Eleven stations - Belgrave, Box Hill, Boronia, Burwood, Croydon, Lilydale, Ferntree Gully, Ferntree Gully CIB, Monbulk, Mooroolbark and Nunawading participated in the Jump Off on Friday 4th May.

Over \$1500 was raised for the National Heart Foundation, with Monbulk, Croydon, Lilydale, Mooroolbark and Nunawading raising around \$300 or more each. Each member of these skipping teams will receive a T-shirt from the National Heart Foundation.



### CONGRATULATIONS!

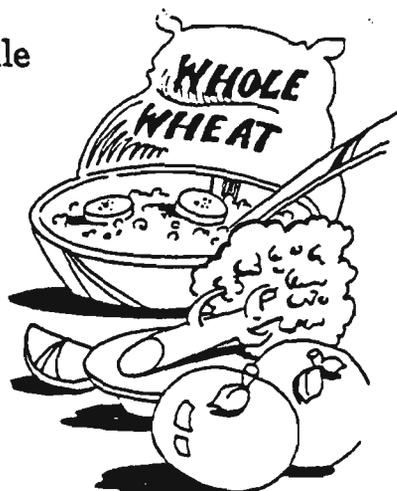
The National Heart Foundation was delighted with the police involvement and express thanks to all members who participated.

### HEALTHY BREAKFASTS

Members at Croydon, Ringwood CIB, Mooroolbark, Lilydale, Ferntree Gully CIB and the Knox District HQ have munched their way through oat bran muffins, fruit salad, toast with tomato, mushrooms, asparagus and corn while taste testing decaffeinated coffee and herbal teas at the Physicop Healthy Breakfasts.

Some good healthy appetites were spotted on the chilly mornings and even Phil's porridge was met with glee!

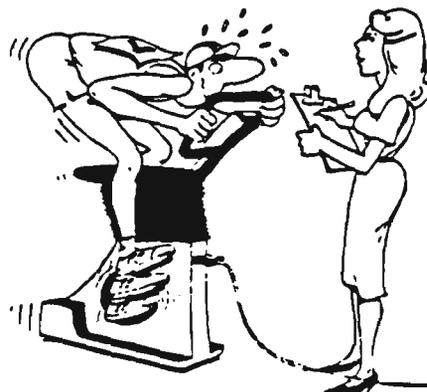
Thanks must be given to Graeme and his mobile kitchen who helped us feed 35-40 hungry members at the Knox District HQ. Without him and his kitchen we'd still be cooking now - **THANKS A MILLION!**



## RETESTING HAS STARTED

Retesting of original "Y" District "Operation Physicop" members has started. Only those members who were part of "Y" District when Physicop began are eligible to be tested. Details of where the mobile Risking Screening Clinic and Fitness Assessments will be is listed below.

- (a) **Nunawading -**  
Monday 18/06/90 to Friday 22/06/90  
Monday 09/07/90 to Friday 13/07/90
- (b) **Ferntree Gully -**  
Monday 25/06/90 to Friday 29/06/90  
Monday 16/07/90 to Friday 20/07/90
- (c) **Lilydale -**  
Monday 02/07/90 to Friday 06/07/90  
Monday 23/07/90 to Friday 27/07/90



The Clinic will only be at the above locations on the Monday and Tuesday of each week. Fitness Assessments will be there all week.

## ONE LAST DRINK?

The consumption of alcohol differs from most other drug taking because of its multiple role. It can be used as a thirst quencher, as a social lubricant, as a food, as a medicine, as an intoxicant, and as a symbol of defying authority.

Many people consume alcohol because they enjoy it. However, many others drink to excess often causing numerous harmful effects on their body and also sometimes resulting in negative social consequences (i.e. marital breakdown).

Alcohol can aggravate problems when used as a crutch to apparently help cope with a stressful time or significant event. Others may use alcohol as a way of coping with loneliness or boredom. However, used in this context, alcohol only acts as a band-aid solution, and doesn't address the underlying problem.

Alcohol is rapidly absorbed from the stomach, small intestine and colon into the circulatory system, having an immediate effect on the body. Complete absorption may take from two to six hours. When alcohol is consumed faster than your body can metabolise it, blood alcohol concentration rises until eventually the individual (if he continues to drink) becomes intoxicated. The effects of intoxication are well known.

Alcohol slows down the central nervous system, impairing co-ordination judgement, and movement. These effects may be particularly detrimental to an individual in an emergency.

The long term effects of heavy alcohol consumption may impair liver function, stomach, brain, the nervous system, heart and reproductive system.

The effect alcohol has on the body is influenced by many factors which are listed below:-

- Body size
- Sex - Females generally have a lower tolerance to alcohol than males as females tend to have higher levels of fat.
- The presence of other drugs in combination with alcohol may have adverse effects.
- Food in your stomach acts as a type of sponge slowing the absorption rate of alcohol considerably.
- The alcohol content of the beverage being consumed varies considerably. Light beer may be a good alternative.

For those watching their weight, the consumption of alcohol will make things a lot more difficult. For example, 1 gramme of alcohol has almost double the kilojoules (kilocalories is the old term) of carbohydrates such as sugar, fruit and vegetables.

To give you an example, one can of "normal" beer (e.g. Fosters Lager) equals approximately 140 calories, whereas one can of light beer (e.g. Carlton Special Light) equals approximately 75 calories. The difference is that to "walk off" the normal beer you would need to walk for 28 minutes as opposed to 14 minutes for the light beer.

So what are the alternatives? Well, for wine drinkers you add soda water or orange juice, and for mixed drinks, the alcoholic content can be lowered by adding ice or water. There is no need to drink alcohol every time at barbeques and other social occasions. When offered a drink, you could say, "No thanks, I have to play squash tonight" (or whatever is appropriate), or simply, "No thanks, I don't want one".

Remember, if used correctly, alcohol can be a pleasurable social tool, but unfortunately if abused can be extremely destructive.

#### **Acknowledgement (Research)**

**K. McCauley**

**J. Noble**

**D. Pocock**



Physical Health Unit  
Police Academy  
View Mount Road  
Glen Waverley, 3150

Telephone: 566-9566

5th April, 1990

Interested Member  
Golf/Foxtrot

Information and Notification of  
Stop Smoking Seminar being held  
on Thursday, 19th April, 1990.

---

### Introduction

1. The dangers of cigarette smoking have been well documented by health professionals and recognised by the general public for some years. There is no longer any doubt that smoking damages an individual's health.
2. Smoking is the number one preventable cause of death and disability in Australia. Each year 17,800 Australians die from smoking related diseases. Every day 49 Australians die as a result of smoking. It is over seven times the annual Australian road toll.

### Action

3. As a result of the "Operation Physicop" survey you recently completed, it is apparent that you are interested in stop smoking programs. A seminar has been organised for this purpose to assist you in the difficult task of quitting for good.
4. The seminar is to be held between 10.30 a.m. and 1.00 p.m. on Thursday, 19th April 1990, in the lecture theatre in the new building ("C" Block). This seminar is free of charge and will include several presenters who will offer participants a variety of methods to give up.
5. The Police Psychology Unit will also present several handy tips to assist you. Various displays featuring free information on smoking (and how to quit) and an excellent video will also be shown. If you are serious about giving up - this is a seminar you should not miss.

Time Off

6. Force Policy (1988) states that members are eligible for paid time-off to attend "approved courses". This time-off is at the discretion of the Officer in Charge of the District and is subject to the exigencies of the service.

7. For the purposes of this policy any Fresh Start course conducted by the Anti-Cancer Council is deemed to be an "approved course". Members who select a program which is not run by the Anti-Cancer Council, such as hypnotherapy or acupuncture provided by properly qualified therapists or the "Operation Physicop" seminar are also eligible for paid time-off.

Conclusion

8. If you are interested in giving up, we can assist by providing you with different tools to help achieve your goal. However, it must be remembered that we cannot offer you any magic pills - you must have the desire to give up. Call 566-9466 for more information.



Phillip M. RALPH  
Senior Constable 23691  
Physical Health Unit



Telephone: (03) 562 2811  
Facsimile: (03) 561 3434

Physical Health Unit  
Police Academy  
Viewmount Road  
Glen Waverley 3150

Officer in Charge

---

18th September, 1990

**SUBJECT:** Stop Smoking Seminar - 10th October, 1990  
- Knox SES Office. For your Information.

---

**Introduction**

1. On Wednesday 10th October, 1990 a *Stop Smoking Seminar* for police members and police public servants will be conducted from 10.00 am to 12.00 noon at the Knox SES office situated off Lewis Road, Studfield (behind Knox City).

**Purpose**

2. This seminar is designed to assist members and public servants who want to give up smoking to do so. It is a voluntary programme and therefore members should not be directed to attend, as this is usually counter-productive.

3. A similar report has been sent to your Station Information Officer, who has been requested to publicise the seminar to members at readouts, etc. It would also be appreciated if you could place the attached notice on the notice board.

**Time-Off**

4. For the purposes of Force Policy (1988), members are permitted paid time-off to attend "approved courses" associated with quitting smoking. This time-off is at the discretion of the Officer in Charge of the District and is dependant on the exigencies of the service at the time.

If you have any queries, please feel free to call me. Thank-you for your assistance.

Phillip M. Ralph  
Snr. Const. 23691  
Physical Health Unit

# "OPERATION PHYSICOP" RESULT SUMMARY SHEET

SURNAME: \_\_\_\_\_ INITIALS: \_\_\_\_\_ DISTRICT: \_\_\_\_\_

RANK: \_\_\_\_\_ STATION: \_\_\_\_\_

AGE: \_\_\_\_\_ SEX: MALE / FEMALE

## RISK SCREENING CLINIC

### FIRST TEST

Dietary Score: \_\_\_\_\_

Blood Pressure: \_\_\_\_\_ / \_\_\_\_\_ mm Hg.

Cholesterol: \_\_\_\_\_ mmol.litre

Triglycerides: \_\_\_\_\_ mmol.litre

Body Mass Index: \_\_\_\_\_

Overall Coronary  
Risk Percentile  
Score: \_\_\_\_\_

### SECOND TEST

\_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_ mm Hg.

\_\_\_\_\_ mmol.litre

\_\_\_\_\_ mmol.litre

\_\_\_\_\_

\_\_\_\_\_

## FITNESS ASSESSMENT

### Body Measures

Weight: \_\_\_\_\_ kg

\_\_\_\_\_ kg

Flexibility: \_\_\_\_\_

\_\_\_\_\_

Abdominal Strength: \_\_\_\_\_

\_\_\_\_\_

Grip Strength: R: \_\_\_\_\_ L: \_\_\_\_\_

R: \_\_\_\_\_ L: \_\_\_\_\_

Sum of Skinfolds: \_\_\_\_\_ mm

\_\_\_\_\_ mm

Body Fat: \_\_\_\_\_ %

\_\_\_\_\_ %

Lean Body Weight: \_\_\_\_\_ kg

\_\_\_\_\_ kg

Ideal Body Weight: \_\_\_\_\_ kg

\_\_\_\_\_ kg

## SPIROMETRY

Pre \*FVC: \_\_\_\_\_ | \*FEV1: \_\_\_\_\_ | \*FEV1% \_\_\_\_\_

Post FVC: \_\_\_\_\_ | FEV1: \_\_\_\_\_ | FEV1% \_\_\_\_\_

Pred FVC: \_\_\_\_\_ | FEV1: \_\_\_\_\_ | FEV1% \_\_\_\_\_

## AEROBIC FITNESS

Pred. VO<sub>2</sub> (Absolute) \_\_\_\_\_ l.min<sup>-1</sup>

\_\_\_\_\_ l.min<sup>-1</sup>

Pred. VO<sub>2</sub> (Relative) \_\_\_\_\_ mls.kg.min.<sup>-1</sup>

\_\_\_\_\_ mls.kg.min.<sup>-1</sup>

Resting Heart Rate: \_\_\_\_\_ beats.min<sup>-1</sup>

\_\_\_\_\_ beats.min<sup>-1</sup>

Pre-test Blood Pressure: \_\_\_\_\_ mm.Hg.

\_\_\_\_\_ mm.Hg.

Post-test Blood Pressure: \_\_\_\_\_ mm.Hg.

\_\_\_\_\_ mm.Hg.

\* FVC = Forced Vital Capacity (Litres)  
FEV1 = Forced Expiratory Volume in 1 second.

FEV1% = % of lung volume in 1 second.

# RISK SCREENING CLINIC TABLES

## APPENDIX K {1}

*Comparison of Risk screening clinic data for 1989-1990 by Age Group.*

Parameter	Age Group 20-29				Age Group 30-39				Age Group 40-49				Age Group 50-59			
	T1	T2	Δ	%Δ	T1	T2	Δ	%Δ	T1	T2	Δ	%Δ	T1	T2	Δ	%Δ
BMI (kg/m <sup>2</sup> )	25.1	24.8	-.30	1.2	26.7	26.4*	-.30	1.1	27.3	26.7*	-.60	2.3	26.6	26.4	-.20	.80
Systolic BP (mm Hg)	120.9	123.5	2.6	2.2	123.7	125.5	1.8	1.5	126.4	128.2	1.8	1.4	118.9	129.1*	10.2	8.6
Diastolic BP (mm Hg)	79.3	77.8	-1.5	1.9	79.5	77.9	-1.6	2.1	83.3	81.0	-2.3	2.8	80.9	80.0	-.90	.11
Diet score	5.3	4.2*	-1.1	26.2	5.4	4.1	-1.3	31.7	4.8	4.0	-.8	20.0	3.6	3.0	-.60	20.0
Physical exercise	1.6	1.3	-.30	23.1	1.7	1.5	-.20	13.0	4.8	4.0	-.80	20.0	3.6	3.0	-.60	20.0
Lifestyle score	12.2	10.4*	-1.8	17.3	13.2	11.6*	-1.6	13.8	12.8	11.8*	-1.0	8.5	12.0	10.6	-1.4	13.2
Body weight (kg)	84.8	83.7*	-1.1	1.3	86.2	85.4	-.80	.9	88.8	87.0*	-1.8	2.1	82.0	82.4	.4	.50
Cigarettes (per officer)	5.3	2.3	-3.0	130.4	4.5	4.2	-.30	7.1	3.1	3.4	.30	9.7	0.0	0.0	0.0	0.0
Cholesterol (mmol/L)	5.0	-	-	-	5.2	-	-	-	5.5	-	-	-	5.6	-	-	-
Triglycerides (mmol/L)	1.2	-	-	-	1.2	-	-	-	1.6	-	-	-	1.1	-	-	-

\* Significant difference at the P < .05 level.

## APPENDIX K {2}

<i>Comparison of Risk Screening Clinic Data for 1989-1990 by Gender.</i>								
<i>Parameter</i>	Males				Females			
	T1	T2	▲	%▲	T1	T2	▲	%▲
BMI (kg/m <sup>2</sup> )	26.7	26.3*	-40	1.5	23.0	22.9	-.10	4.4
Systolic BP (mm Hg)	123.9	126.3	2.4	1.9	116.7	119.8	3.1	2.6
Diastolic BP (mm Hg)	80.1	78.5*	1.6	2.0	72.4	71.6	-.80	1.2
Diet score	5.4	4.3*	1.1	25.6	4.3	3.9	-.40	10.3
Physical exercise	1.6	1.3*	-.30	23.1	1.8	1.4	-.40	28.6
Lifestyle score	12.9	11.3*	-1.6	14.3	11.5	10.3	1.2	11.7
Body weight (kg)	87.1	86.0*	-1.1	1.3	65.7	65.3	.40	6.1
Cigarettes (per officer)	4.2	3.3	-.90	27.3	4.7	2.8	1.9	67.9
Cholesterol (mmol/L)	5.2	-	-	-	5.0	-	-	-
Triglycerides (mmol/L)	1.3	-	-	-	1.0	-	-	-

\* Significant difference at the  $P < .05$  level.

## APPENDIX K {3}

<i>Comparison of Number of Cigarettes Smoked Per Day, 1989-1990 - Part A: Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990
<i>No. Smoked</i>				
0	111	76.6	114	78.6
1	-	-	1	.7
5	1	.7	2	1.4
8	-	-	1	.7
10	10	6.9	12	8.3
12	-	-	1	.7
15	3	2.1	4	2.8
20	13	9.0	5	3.4
25	4	2.8	2	1.4
30	2	1.4	2	1.4
50	1	.7	1	.7

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {4}

<i>Comparison of Number of Cigarettes Smoked Per Day by Age, 1989-1990 - Part A: Risk Screening Clinic Questionnaire.</i>										
	20-29*		30-39		40-49		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Status</i>										
Non-smoker	32	35	46	47	26	25	7	7	76.6	78.6
< 10 day	3	5	11	11	-	1	-	-	9.7	11.7
20 day	9	4	8	7	3	3	-	-	13.8	9.7

\* Significant difference at the  $P < 0.05$  level.

## APPENDIX K {5}

<i>Comparison of Number of Cigarettes Smoked Per Day by Gender, 1989-1990 - Part A: Risk Screening Clinic Questionnaire.</i>						
	Males	Females	Males	Females	Row %	
	T1 (%)	T1 (%)	T2 (%)*	T2 (%)	T1	T2
<i>Status</i>						
Non-smoker	100(77.5)	11(68.7)	102(79.1)	12(75.0)	76.6	78.6
< 10 day	11(8.5)	3(18.8)	14(10.9)	3(18.8)	9.7	11.7
20 day	18(14.0)	2(12.5)	13(10.1)	1(6.3)	13.8	9.7

\* Significant difference at  $p < 0.05$ .

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {6}

<i>Comparison of Total Alcohol Intake, 1989-1990 - Part B: Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<i>Status</i>				
Non-drinker	12	8.3	19	13.1
Low	83	57.2	90	62.1
Moderate	47	32.4	36	24.8
High	3	2.1	-	-

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {7}

<i>Comparison of Total Alcohol Intake by Age, 1989-1990 - Part B: Risk Screening Clinic Questionnaire.</i>										
	20-29*		30-39*		40-49		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Status</i>										
Non-drinker	5	8	3	6	2	2	2	3	8.3	13.1
Low	25	27	38	44	14	17	2	2	54.5	62.1
Moderate	14	9	23	15	12	10	1	2	34.5	24.8
High	-	-	1	-	1	-	2	-	2.8	0.0

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {8}

<i>Comparison of Total Alcohol Intake by Gender, 1989-1990 - Part B: Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 (%)	Males T2 (%)*	Females T2 (%)*	Row %	
					T1	T2
<i>Status</i>						
Non-drinker	11(8.5)	1(6.3)	14(10.9)	5(31.3)	8.3	13.1
Low	65(50.4)	14(87.5)	81(62.8)	9(56.3)	54.5	62.1
Moderate	49(38.0)	1(6.3)	34(26.4)	2(12.5)	34.5	24.8
High	4(3.1)	-	-	-	2.9	0.0

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

Part C, Risk Screening Clinic Questionnaire is related to diabetic status. No police officer reported being diabetic in either Test 1 or 2.

## APPENDIX K {9}

<i>Comparison of Frequency of Eating Meat Per Week, 1989-1990 - Part D (1): Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<i>Frequency</i>				
Never	1	.7	2	1.4
1-7	89	61.4	115	79.3
> 7	55	37.9	28	19.3

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {10}

<i>Comparison of Frequency of Eating Meat Per Week by Age, 1989-1990 - Part D (1): Risk Screening Clinic Questionnaire.</i>										
	20-29*		30-39*		40-49*		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Frequency</i>										
Never	-	-	-	-	1	1	-	1	.70	1.4
1-7 week	22	31	42	54	20	25	5	5	61.4	79.3
> 7 week	22	13	23	11	8	3	2	1	37.9	19.3

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {11}

<i>Comparison of Frequency of Eating Meat Per Week by Gender, 1989-1990 - Part D (1): Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 (%)	Males T2 (%)*	Females T2 (%)	Row %	
					T1	T2
<i>Frequency</i>						
Never	1(.7)	-	2(1.6)	-	.70	1.4
1-7 week	77(59.7)	12(75.0)	100(77.5)	15(75.0)	61.4	79.3
> 7 week	51(39.5)	4(25.0)	27(20.9)	1(25.0)	37.9	19.3

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {12}

<i>Comparison of Egg Consumption Per Week, 1989-1990 - Part D (2): Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<i>Frequency</i>				
0	97	66.9	119	82.1
3-5	45	31.0	26	17.9
> 5	3	2.1	-	-

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {13}

<i>Comparison of Egg Consumption Per Week by Gender, 1989-1990 - Part D (2): Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 (%)	Males T2 (%)*	Females T2 (%)	Row %	
					T1	T2
<i>Frequency</i>						
< 2	86(66.7)	11(68.8)	106(82.2)	13(81.3)	66.9	82.1
3-5	41(31.8)	4(25.0)	23(17.8)	3(18.7)	31.0	17.9
> 6	2(1.6)	1(6.3)	-	-	2.1	0.0

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {14}

<i>Comparison of Egg Consumption Per Week by Age, 1989-1990 - Part D (2): Risk Screening Clinic Questionnaire.</i>										
	20-29*		30-39		40-49		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<b>Frequency</b>										
< 2	25	32	42	56	24	25	6	6	66.9	82.1
3-5	18	12	21	9	5	4	1	1	31.0	17.9
> 6	1	-	2	-	-	-	-	-	2.1	0.0

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {15}

<i>Comparison of Eating Take-Away Meals Per Week, 1989-1990 - Part D (3): Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<b>Frequency</b>				
Never	19	13.1	25	17.2
1 or 2	87	60.0	102	70.3
3 or 4	27	18.6	12	8.3
> 4	12	8.3	6	4.1

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {16}

<i>Comparison of Eating Take-Away Meals Per Week by Age, 1989-1990 - Part D (3): Risk Screening Clinic Questionnaire.</i>										
	20-29		30-39*		40-49		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Frequency</i>										
Never	2	3	6	11	6	7	5	4	13.1	17.2
1-2 week	29	34	40	46	16	19	2	3	60.0	70.4
3-4 week	9	3	12	7	6	2	-	-	18.6	8.3
> 4 week	4	4	7	1	1	1	-	-	8.3	4.1

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {17}

<i>Comparison of Eating Take-Away Meals Per Week by Gender, 1989-1990 - Part D (3): Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 (%)	Males T2 (%)*	Females T2 (%)	Row %	
					T1	T2
<i>Frequency</i>						
Never	15(11.6)	4(25.0)	22(17.1)	3(18.8)	13.1	17.2
1-2 week	77(59.7)	10(62.5)	90(69.8)	12(75.0)	60.0	70.4
3-4 week	25(19.4)	2(12.5)	11(8.5)	1(6.3)	18.6	8.3
> 4 week	12(9.3)	-	6(4.7)	-	8.3	4.1

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {18}

<i>Comparison in Frequency of Adding Salt, 1989-1990 - Part D (4): Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<i>Response</i>				
No	78	53.8	92	63.4
Yes	67	46.2	53	36.6

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {19}

<i>Comparison in Frequency of Adding Salt by Age, 1989-1990 - Part D (4): Risk Screening Clinic Questionnaire.</i>										
	20-29		30-39		40-49		50-59		Row %	
	T1	T2								
<i>Response</i>										
No	25	27	39	45	11	16	3	4	53.8	63.5
Yes	19	17	26	20	18	13	4	3	46.2	36.5

## APPENDIX K {20}

<i>Comparison in Frequency of Adding Salt by Gender, 1989-1990 - Part D (4): Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 (%)	Males T2 (%)*	Females T2 (%)	Row %	
<i>Response</i>					T1	T2
No	70(54.3)	8(50)	81(62.8)	11(68.8)	53.8	63.5
Yes	59(45.7)	8(50)	48(37.2)	5(31.2)	46.2	36.5

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {21}

<i>Comparison of Eating Cakes or Biscuits Daily, 1989-1990 - Part D (5): Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n	1990 %
<i>Response</i>				
No	88	60.7	94	64.8
Yes	57	39.3	51	35.2

## APPENDIX K {22}

<i>Comparison of Eating Cakes or Biscuits Daily by Age, 1989-1990 - Part D (5): Risk Screening Clinic Questionnaire.</i>										
	20-29		30-39		40-49		50-59		Row %	
	T1	T2								
<i>Response</i>										
No	25	26	39	43	20	22	4	3	60.7	64.8
Yes	19	18	26	22	9	7	3	4	39.3	35.2

## APPENDIX K {23}

<i>Comparison of Eating Cakes or Biscuits Daily by Gender, 1989-1990 - Part D (5): Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 %	Males T2 (%)	Females T2 (%)	Row %	
<i>Response</i>					T1	T2
No	79(61.2)	9(56.3)	86(66.7)	8(50.0)	60.7	64.8
Yes	50(38.8)	7(43.7)	43(33.3)	8(50.0)	39.3	35.2

## APPENDIX K {24}

<i>Comparison of Frequency of Frying Food Per Week, 1989-1990 - Part D (6): Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<i>Frequency</i>				
Never	30	20.7	41	28.3
1-2	89	61.4	83	57.2
> 2	26	17.9	21	14.5

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {25}

<i>Comparison of Frequency of Frying Food Per Week by Age, 1989-1990 - Part D (6): Risk Screening Clinic Questionnaire.</i>										
	20-29		30-39		40-49		50-59		Row %	
	T1	T2								
<i>Frequency</i>										
Never	6	8	14	21	7	8	3	4	20.7	28.3
1-2	25	26	43	35	17	19	4	3	61.4	57.2
> 2	13	10	8	9	5	2	-	-	17.9	14.5

## APPENDIX K {26}

<i>Comparison of Frequency of Frying Food Per Week by Gender, 1989-1990 - Part D (6): Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 (%)	Males T2 (%)*	Females T2 (%)	Row %	
					T1	T2
<b>Frequency</b>						
Never	24(18.6)	6(37.5)	35(27.1)	6(37.5)	20.7	28.3
1-2	80(62.0)	9(56.3)	75(58.1)	8(50.0)	61.4	57.2
> 2	25(19.4)	1(6.3)	19(14.7)	2(12.5)	17.9	14.5

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {27}

<i>Comparison in Use of Low-Fat Dairy Products, 1989-1990 - Part D (7): Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<b>Response</b>				
No	74	51	102	70.3
Yes	71	49	43	29.7

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {28}

<i>Comparison in Use of Low Fat Dairy Products by Age, 1989-1990 - Part D (7): Risk Screening Clinic Questionnaire.</i>										
	20-29		30-39*		40-49		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Response</i>										
No	17	11	39	21	13	11	2	-	49.0	29.7
Yes	27	33	26	44	16	18	5	7	51.0	70.3

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {29}

<i>Comparison in Use of Low Fat Dairy Products by Gender, 1989-1990 - Part D (7): Risk Screening Clinic Questionnaire.</i>						
	Males T1 (%)	Females T1 (%)	Males T2 (%)*	Females T2 (%)	Row %	
					T1	T2
<i>Response</i>						
No	69(53.5)	2(12.5)	40(31.0)	3(18.8)	49.0	29.7
Yes	60(46.5)	14(87.5)	89(69.0)	13(81.2)	51.0	70.3

\* Significant difference at  $P < 0.05$  level.

## APPENDIX K {30}

<i>Comparison of Diet Score, 1989-1990 - Part D: Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<i>Score</i>				
0	-	-	1	.7
1	5	3.4	5	3.4
2	8	5.5	25	17.2
3	15	10.3	20	13.8
4	25	17.2	24	16.6
5	26	17.9	39	26.9
6	27	18.6	19	13.1
7	22	15.2	4	2.8
8	8	5.5	7	4.8
9	5	3.4	1	.7
10	2	1.4	-	-
11	2	1.4	-	-

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {31}

<i>Comparison of Diet Score by Age, 1989-1990 - Part D: Risk Screening Clinic Questionnaire.</i>										
	20-29*		30-39*		40-49*		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Score</i>										
0	-	-	-	-	-	-	-	1	0.0	.7
1	1	1	1	4	1	-	2	-	3.4	3.5
2	1	5	3	8	3	10	1	2	5.5	17.2
3	5	3	8	14	2	2	-	1	10.3	13.8
4	7	9	10	11	7	3	1	1	17.2	16.6
5	5	11	15	17	5	9	1	2	17.9	26.9
6	10	8	10	7	5	4	2	-	18.6	13.1
7	6	3	11	1	5	-	-	-	15.2	2.8
8	5	3	2	3	1	1	-	-	5.5	4.8
9	3	1	2	-	-	-	-	-	3.5	.7
10	-	-	2	-	-	-	-	-	1.4	-
11	1	-	1	-	-	-	-	-	1.4	-

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {32}

<i>Comparison of Diet Score by Gender, 1989-1990 - Part D: Risk Screening Clinic Questionnaire.</i>						
	<b>Males T1 (%)</b>	<b>Males T2 (%)*</b>	<b>Females T1 (%)</b>	<b>Females T2 (%)</b>	<b>Row %</b>	
<i>Score</i>					<b>T1</b>	<b>T2</b>
0	-	1(.80)	-	-	-	.7
1	3(2.3)	3(2.3)	2(12.5)	2(12.5)	3.4	3.4
2	8(6.2)	23(17.8)	-	2(12.5)	5.5	17.2
3	13(10.1)	19(14.7)	2(12.5)	1(6.3)	10.3	13.8
4	19(14.7)	20(15.5)	6(25.0)	4(25.0)	17.2	16.6
5	24(18.6)	34(26.4)	2(12.5)	5(31.3)	17.9	26.9
6	24(18.6)	17(13.2)	3(18.8)	2(12.5)	18.6	13.1
7	22(17.1)	4(3.1)	-	-	15.2	2.8
8	7(5.4)	7(5.4)	1(6.3)	-	5.5	4.8
9	5(3.9)	1(.80)	-	-	3.4	.70
10	2(1.6)	-	-	-	1.4	-
11	2(1.6)	-	-	-	1.4	-

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {33}

<i>Comparison in Exercise Levels Per Week, 1989-1990 - Part G: Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
<i>Level</i>				
High	31	21.4	41	28.3
Moderate	41	28.3	51	35.2
Low	32	22.1	20	13.8
Occasional	37	25.5	29	20.0
Sedentary	4	2.8 <sup>(1)</sup>	4	2.8

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {34}

<i>Comparison in Exercise Levels Per Week by Age, 1989-1990 - Part G: Risk Screening Clinic Questionnaire.</i>										
	20-29*		30-39		40-49		50-59		Row %	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Level</i>										
High	13	16	10	17	6	6	2	2	21.4	28.3
Moderate	13	16	20	20	6	12	2	3	28.3	35.2
Low	8	5	17	9	7	5	-	1	22.1	13.8
Occasional	10	7	16	18	8	3	3	1	25.5	20.0
Sedentary	-	-	2	1	2	3	-	-	2.8	2.8

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {35}

<i>Comparison in Exercise Levels Per Week by Gender, 1989-1990 - Part G: Risk Screening Clinic Questionnaire.</i>						
	<b>Males T1 (%)</b>	<b>Females T1 (%)</b>	<b>Males T2 (%)*</b>	<b>Females T2 (%)</b>	<b>Row %</b>	
<i>Level</i>					<b>T1</b>	<b>T2</b>
High	28(21.7)	3(18.8)	37(28.7)	4(25.0)	21.4	28.3
Moderate	37(28.7)	4(25.0)	45(34.9)	6(37.5)	28.3	35.2
Low	27(20.9)	5(31.3)	19(14.7)	1(6.3)	22.1	13.8
Occasional	35(27.1)	2(12.5)	24(18.6)	5(31.3)	25.5	20.0
Sedentary	2(1.6)	2(12.5)	4(3.1)	-	2.8	2.8

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

## APPENDIX K {36}

<i>Comparison in Lifestyle Score 1989-1990 - Risk Screening Clinic Questionnaire.</i>				
	1989 n	1989 %	1990 n*	1990 %
4	-	-	1	.7
5	-	-	4	2.8
6	5	3.5	4	2.8
7	6	4.1	8	5.5
8	10	6.9	19	13.1
9	7	4.8	13	9.0
10	12	8.3	19	13.1
11	18	12.4	17	11.7
12	16	11.0	18	12.4
13	13	9.0	11	7.6
14	16	11.0	5	3.5
15	12	8.3	8	5.5
16	7	4.8	5	3.5
17	6	4.1	3	2.1
18	5	3.4	4	2.8
19	3	2.1	1	.7
20	3	2.1	3	2.1
21	3	2.1	2	1.4
22	2	1.4	-	-
23	1	.7	-	-

\* Significant difference at  $P < 0.05$  level.

(a) Percentages do not add up to 100 per cent due to rounding off.

**HEALTH AND FITNESS SURVEY TABLES****APPENDIX L {1}**

<i>Question 1 and 2 Health and Fitness Survey - Change in Reasons For Giving Up Smoking and Interest in Stop Smoking Programmes 1989 to 1990.</i>		
	<b>T1</b>	<b>T2</b>
<i>Reasons</i>		
Expense	9	4
Concern for health	21	24
Ill health	2	1
Social pressure	1	1
Other	0	0
<i>Are you interested in Stop Smoking Programmes?</i>		
Yes	18	15

## APPENDIX L {2}

<i>Questions 3-9 Health and Fitness Survey - Change In Responses 1989 to 1990.</i>										
	0-20 <sup>(a)</sup>		20-40		40-60		60-80		80-100	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Question</i>										
3	0	0	6	9	25	22	32	24	36	24
4	5	4	6	6	13	18	21	27	54	44
5	33	25	25	34	33	30	6	8	2	2
6	20	22	31	30	33	31	12	11	3	5
7	15	14	17	16	30	33	24	27	13	9
8	46	32	22	27	18	28	10	8	3	4
9	3	2	10	15	26	25	27	28	33	29

(a) The 100 mm line has been divided into five equal sections, starting at 0-20 mm through to 80-100 mm.

A table featuring the mean responses to Questions 3-9 is listed in the results section.

## APPENDIX L {3}

<i>Question 10 Health and Fitness Survey - Change in Marital Status 1989 to 1990.</i>		
	1989	1990
<i>Marital Status</i>		
Married	77	78
Single	15	11
Defacto	5	4
Widowed	1	2
Divorced	1	0
Separated	1	5

## APPENDIX L {4}

<i>Questions 11 and 12 Health and Fitness Survey - Change in Number Who Have Children (Q.11) and Difficulty Finding Childcare (Q.12).</i>		
	1989	1990
<i>Question</i>		
<i>Have children?</i>	63	63
<i>Difficulty with childcare?</i>	9	16

## APPENDIX L {5}

<i>Questions 13-16 Health and Fitness Survey - Change in Responses Relating to Shiftwork 1989 to 1990.</i>		
	1989	1990
<i>Question</i>		
<i>Does your spouse work?</i>		
	62	70
Full time day	32	30
Part time day	18	23
Shiftwork full time	7	10
Shiftwork part time	7	7
<i>Do you presently work shiftwork?</i>		
	87	85
<i>How many hours overtime did you work last fortnight?</i>		
	4.2	5.9
<i>How many hours overtime do you generally work?</i>		
	5.0	4.5

Question 17 (a-d) is tabulated in the results section.

## APPENDIX L {6}

<i>Questions 18-20 Health and Fitness Survey - Change In Frequency Distribution 1989 to 1990.</i>										
	0-20		20-40		40-60		60-80		80-100	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Question</i>										
18 <sup>(a)*</sup>	12	5	22	24	32	28	22	14	11	14
19	47	52	31	25	15	14	4	4	2	4
20	6	6	19	24	30	28	25	26	19	15

Note (a)

Question 18 *How physically fit do you feel at the moment?*

Question 19 *How would you rate the amount of physical activity you perform at work?*

Question 20 *How would you rate the amount of physical activity during your leisure time?*

\* Significant difference at the  $P < .05$  level.

A table featuring the mean responses to Questions 18-20 is listed in the results section.

## APPENDIX L {7}

<i>Questions 21 and 22 Health and Fitness Survey - Change in Rating Fitness 1989 to 1990.</i>		
	1989	1990
<i>Question</i>		
<i>How would you rate your fitness compared to the rest of the community?</i>		
Well below average	0	1
Below average	8	5
Average	56	50
Above average	33	40
Well above average	2	3
<i>How would you rate your fitness compared to other members of your rank?</i>		
Well below average	0	0
Below average	4	10
Average	54	39
Above average	38	46
Well above average	3	4

## APPENDIX L {8}

*Questions 23 and 24 Health and Fitness Survey - Change in Knowledge Regarding How Often and How Long A Person Needs to Exercise Per Week to Keep Fit.*

	1989	1990
<i>Choices</i>		
Most days	24	26
About 3 times a week	56	70
About once a week	7	3
Or less often than that	1	0
<i>How long on each occasion?</i>	36.6 <sup>(a)</sup>	39.9

(a) *Mean time (in minutes) respondents thought a person had to exercise each session to keep fit.*

## APPENDIX L {9}

*Questions 25 and 26 Health and Fitness Survey - Change in Exercise Locations 1989 to 1990.*

	1989	1990
<i>Question</i>		
<i>If you participate in sport or exercise, where do you usually do it?</i>		
Home	31	34
Sport/recreation facility	53	55
Work	4	6
Street/park	7	32
Police Academy	9	4
Other	0	7
<i>Where would you like to participate in sport or exercise?</i>		
Home	29	37
Sport/recreation facility	58	62
Work	36	39
Street/park	23	24
Police Academy	17	21
Other	7	1

## APPENDIX L {10}

<i>Question 27 Health and Fitness Survey - Change in Preference For Exercising Alone or With Other People 1989 to 1990.</i>		
	1989	1990
<i>Preference</i>		
Exercise alone	26	27
Exercise with other people	70	68

## APPENDIX L {11}

<i>Question 28 Health and Fitness Survey - Change in Preference In Joining a Sports or Exercise Club 1989 to 1990.</i>		
	1989	1990
<i>Preference</i>		
Yes	52	41
No	47	53

## APPENDIX L {12}

*Questions 29 (a) and (b) Health and Fitness Survey - Change in When Most Likely To Participate in a Health and Fitness Programme 1989 to 1990.*

	1989	1990
<i>Preference<sup>(a)</sup></i>		
Monday	44	42
Tuesday	8	4
Wednesday	9	10
Thursday	7	8
Friday	8	5
Weekend	5	10
<i>Time of day</i>		
Before work	20	17
Lunch break	19	12
After work	26	16
Evenings	23	38

*(a) Means respondents put that day or time as their first preference.*

## APPENDIX L {13}

<i>Question 31 Health and Fitness Survey - Change In Things Most Likely to Encourage Exercise, 1989/1990.</i>				
	Yes		No	
	T1	% T2	T1	% T2
<i>Statement</i>				
More information about local facilities	12.1	18.2	87.9	81.8
Other people to do things with	35.4	36.4	64.6	63.6
Childcare at leisure facilities	8.1	5.1	91.9	94.9
Better local facilities	23.2	25.3	76.8	74.7
More information about benefits of exercise	8.1	8.1	91.9	91.9
More leisure time	49.5	51.5	50.5	48.5
Less expensive facilities	49.5	47.5	50.5	52.5
More parks and green spaces	9.1	8.1	90.9	91.9
Availability of medical check-up	31.3	4.0*	68.7	96.0
Cheaper/more frequent public transport	1.0	1.0	99.0	99.0
Access to facilities at work	77.8	70.7	22.2	30.3
More things suitable for all the family	28.3	25.3	71.7	74.7
Other	5.0	8.0	95.0	92.0

\* Significant difference at the  $P < .05$  level.

## APPENDIX L {14}

<i>Questions 32-34 Health and Fitness Survey - Change in Preferences Regarding Health and Fitness Programmes Conducted at Work.</i>		
	1989	1990
<i>Question</i>		
<i>Would you participate in health and fitness programmes provided at work?</i>		
Yes	97	97
<i>Would you be willing to contribute for an activity run three times per week?</i>		
Yes	84	83
<i>What is the most you would be willing to contribute for an activity?</i>		
Nil	13	14
\$2 per week	1	21
\$5 per week	16	39
\$10 per week	45	19
\$20 per week	22	5
\$30 per week	2	1
\$40 per week	0	0

Questions 35-37 were not computerised due to their complex nature and the lack of any benefit from doing so.

## APPENDIX L {15}

*Mean Responses to Question 38 Health and Fitness Survey - Main Reasons For Not Getting More Exercise.*

	1989		1990	
	Yes	%	Yes	%
<b>Response</b>				
I'm not the sporty type	13	13.1	14	14.1
I haven't got the time	55	55.6	60	60.6
I've got young children to look after	27	27.3	27	27.3
I'm too shy or embarrassed	3	3.0	1	1.0
My health is not good enough	4	4.0	4	4.0
There is no-one to do it with	21	21.2	17	17.2
I can't afford it	21	21.2	22	22.2
I'm too old	3	3.0	3	3.0
I have an injury/disability	15	15.2	11	11.1
No suitable facilities nearby	8	8.1	9	9.1
Need to rest and relax in spare time	25	25.3	31	31.3
I don't have time because of work	35	35.4	31	31.3
I might get injured/damage my health	2	2.0	2	2.0
I don't enjoy physical activity	5	5.0	3	3.0
Haven't got the right clothes/equipment	6	6.1	8	8.1
I'd never keep it up	19	19.2	17	17.2
I'm overweight	11	11.1	6	6.1
I haven't got the energy	9	9.1	8	8.1

## APPENDIX L {16}

<i>Questions 39-47 Health and Fitness Survey - Change In Attitudes To General Health 1989 to 1990.</i>										
	0-20		20-40		40-60		60-80		80-100	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<i>Question</i>										
39	32	36	32	29	20	16	9	12	5	6
40	45	44	25	32	23	19	5	4	1	0
41	2	2	3	3	12	9	26	41	56	44
42	1	2	3	0	1	5	29	38	65	54
43	62	50	22	33	7	4	3	6	5	6
44	66	63	30	27	2	5	1	4	0	0
45	2	1	9	6	20	18	21	26	47	48
46	1	2	5	3	20	17	48	45	25	32
47	44	50	36	38	14	3	5	6	0	2

A table featuring the mean responses to Questions 39-47 is listed in the results section.

**FITNESS TESTING TABLES**

Overall Fitness Assessment results are tabulated in the results section.

**APPENDIX M {1}**

<i>Comparison of Anthropometric Data, 1989-1990. Fitness Assessment.</i>						
	Overall		Males		Females	
	T1	T2	T1	T2	T1	T2
<i>Parameter</i>						
Abdominal	23.2	21.3*	23.9	22.0*	19.5	17.6
Iliac	15.4	13.9*	-	-	12.3	12.4
Mid-axillary	13.6	13.3	13.6	13.3	-	-
Pectoral	16.0	15.9	16.0	15.9	-	-
Subscapular	16.3	14.1*	16.3	14.1*	-	-
Thigh	15.7	14.3*	14.0	12.6*	24.5	23.6
Tricep	12.6	12.4	12.6	11.6	17.9	19.3
Waist	90.6	91.2	90.6	91.2	-	-
Weight	80.4	81.3*	83.6	84.4*	64.3	65.7*
Wrist	6.0	6.0	6.0	6.0	-	-

\* Significant difference at the  $P < .05$  level.

## APPENDIX M {2}

<i>Changes in Fitness Assessment Parameters by Age, Group 2 (n=110) 1989 to 1990.</i>								
	20-29		30-39		40-49		50-59	
	T1	T2	T1	T2	T1	T2	T1	T2
<i>Parameter</i>								
Per cent Fat	17.6	16.8	18.7	17.4*	19.8	17.9	18.7	19.2
Lean Body Weight (kg)	60.4	61.9*	67.8	69.0*	67.9	69.1	63.7	64.6
Flexibility (cm)	2.1	1.9	1.4	1.5	1.0	2.4	-9.0	-7.0
Abdominal Strength	4.3	4.4	3.2	3.6*	2.4	3.10	2.3	1.7
Grip Strength (R) (kg)	43.7	46.0*	52.3	54.3*	51.7	50.4	45.2	44.5
Grip Strength (L)(kg)	41.8	44.2*	49.7	52.3*	49.4	50.0	45.0	42.2
Systolic BP (mm Hg)	128.2	119.3*	129.7	127.3	132.2	127.7	130.2	129.2
Diastolic BP (mm Hg)	77.6	73.4*	82.3	77.0*	85.1	78.6*	85.5	79.0
VO <sub>2</sub> (l.min. <sup>-1</sup> )	3.8	3.8	3.8	4.5	3.6	3.90	3.2	3.0
Relative VO <sub>2</sub> (ml.kg. <sup>-1</sup> min. <sup>-1</sup> )	52.2	52.0	46.3	47.3	68.4	67.4	39.6	37.7

\* Significant difference at the  $P < .05$  level.

## APPENDIX M {3}

<i>Changes in Fitness Assessment Parameters by Gender, Group 2 (n=110) 1989 to 1990.</i>				
	Males		Females	
	T1	T2	T1	T2
<i>Parameter</i>				
Per cent Fat	18.0	16.8*	21.7	20.5
Lean Body Weight (kg)	68.4	69.6*	49.7	51.5*
Flexibility (cm)	1.1	1.6	2.4	2.5
Abdominal Strength	3.2	3.6*	3.8	3.9
Grip Strength (R) (kg)	52.2	53.7*	34.3	34.6
Grip Strength (L)(kg)	50.3	52.0*	30.1	32.7*
Systolic BP (mm Hg)	131.4	127.2*	121.1	114.5*
Diastolic BP (mm Hg)	82.8	77.7*	75.6	69.5*
VO <sub>2</sub> (l.min. <sup>-1</sup> )	3.9	4.3	3.0	3.1
Relative VO <sub>2</sub> (ml.kg. <sup>-1</sup> min. <sup>-1</sup> )	47.2	47.7	46.8	48.6

\* Significant difference at the  $P < .05$  level.

**EVALUATION SURVEY TABLES****APPENDIX N {1}**

<i>Mean Age and Years of Service of Respondents to Evaluation Survey by Rank.</i>			
	<b>Mean Age (min-max)</b>	<b>Mean YOS (min-max)</b>	<b>Number</b>
<b><i>Rank</i></b>			
Constable	27 (21-38)	3.98 (2-8)	44
Senior constable	32.1 (24-48)	11.4 (5-28)	114
Sergeant	37.9 (27-59)	16.9 (9-37)	67
Senior Sergeant	43 (34-54)	23.0 (17-31)	22
Inspector or above	46.9 (39-54)	25.4 (13-35)	10
Reservist	58.0 (54-60)	21.3 (17-24)	3
<b><i>All Ranks</i></b>	<b>34.6 (21-60)</b>	<b>13.3 (2-37)</b>	<b>262</b>
<b><i>Sex</i></b>			
Male	35.1 (21-60)	13.9 (2-35)	220
Female	31.6 (22-60)	9.5 (2-42)	42

## APPENDIX N {2}

<i>Question 1 Evaluation Survey - Participation Rates in Risk Screening Clinic and Fitness Assessment.</i>			
	<b>Number</b>	<b>Mean Age</b>	<b>Mean Years Service</b>
<i>Parameter</i>			
Clinic	220	34.7	13.2
Fitness Assess.	146	35.8	14.4
None	40	34.5	14.3

## APPENDIX N {3}

<i>Question 2 Evaluation Survey - Reasons for Not Participating in Programme.<sup>(a)</sup></i>		
	<b>Number</b>	<b>Per cent</b>
<i>Reasons</i>		
Other	16	25
Lack of time	15	23.4
Lack of opportunity	12	18.8
Not interested	5	7.8
Affect career	5	7.8
Confidentiality	3	4.7
On leave	3	4.7
Sick/injured	3	4.7
Didn't know about it	2	3.1

(a) "Programme" for the purpose of this question means Risk Screening Clinic or Fitness Assessment in 1989.

## APPENDIX N {4}

<i>Question 3 (a) Evaluation Survey - Number of Respondents Who Heard About or Attended Programme Activities.</i>					
	<b>Heard About (N)</b>	<b>Heard About (%)</b>	<b>Attended (N)</b>	<b>Attended (%)</b>	<b>Ratio (%)<sup>(a)</sup></b>
<i>Activity</i>					
Jump Rope	178	67.9	25	9.5	14.0
Breakfasts	151	57.6	58	22.1	38.4
Barbecues	142	54.2	100	38.2	70.4
Smoking seminar	135	51.5	2	.80	1.5
Golf	128	48.9	16	6.1	12.5
Aerobic/aqua	114	43.5	2	.80	1.8
Tennis	98	37.4	13	5.0	13.2
Indoor cricket	89	34.0	18	6.9	20.2
Horse riding	89	34.0	0	0	0
Stress management	88	33.6	10	3.8	11.4
Ten Pin bowling	78	29.8	5	1.9	6.4

(a) *The ratio per cent is calculated by dividing the number who attended the activity by the number who heard about it. The other two per cent columns are expressed as a percentage of all respondents to the survey, i.e. 262.*

## APPENDIX N {5}

<i>Question 3 (b) Evaluation Survey - Most Common Reasons for Not Participating in the Risk Screening Clinic.</i>			
	<b>Number</b>	<b>Per cent<sup>(a)</sup></b>	<b>Overall %<sup>(b)</sup></b>
<i>Reason</i>			
Own Dr/Clinic	11	36.7	4.2
Lack of time	7	23.3	2.7
Work Committments	5	16.7	1.9
On leave	4	13.3	1.5
Didn't need it	3	10.0	1.1

(a) Percentage of those who responded to Question 3(b).

(b) Percentage of total respondents (i.e. 262).

## APPENDIX N {6}

<i>Question 3 (c) Evaluation Survey - Most Common Reasons for Not Attending the Fitness Assessment in 1989.</i>			
	Number	Per cent <sup>(a)</sup>	Overall % <sup>(b)</sup>
Reason			
Lack of time	19	22.6	7.3
Other	9	10.7	3.4
Work commitments	8	9.5	3.1
Recreation leave	7	8.3	2.7
Injured	7	8.3	2.7
Shiftwork	6	7.1	2.3
Didn't know	4	4.8	1.5
Not interested	4	4.8	1.5
Transferred	4	4.8	1.5
Pregnant	3	3.6	1.1
High coronary risk	3	3.6	1.1
Didn't need it	3	3.6	1.1
Times held	2	2.4	.80
Already attending	1	1.1	.40
Confidentiality	1	1.1	.40
Court	1	1.1	.40
Sick leave	1	1.1	.40
Lack of transport	1	1.1	.40

(a) Percentage of those who responded to Question 3(c).

(b) Percentage of total respondents (i.e. 262).

## APPENDIX N {7}

<i>Question 3(d) Evaluation Survey - Reasons for Not Attending Fitness Assessment or Risk Screening Clinic.<sup>(a)</sup></i>			
	<b>Number</b>	<b>Per cent<sup>(b)</sup></b>	<b>Overall %<sup>(c)</sup></b>
<i>Reasons</i>			
Other	6	33.3	2.3
Times conducted	5	27.8	1.9
Work committments	3	16.7	1.1
Didn't need it	2	11.1	.80
Injured	1	5.6	.40
Already attending	1	5.6	.40

- (a) *These respondants did not attend a Fitness Assessment or the Risk Screening Clinic, but did attend scheduled activities.*
- (b) *Percentage of those who responded to Question 3(d).*
- (c) *Percentage of total respondants (i.e. 262).*

## APPENDIX N {8}

<i>Question 4-6 Evaluation Survey - Responses Relating to the Bulletin/Newsletter.</i>				
	<b>Yes</b>	<b>Per cent</b>	<b>No</b>	<b>Per cent</b>
<i>Have you received copies of the Bulletin/Newsletter?</i>				
	202	77.0 <sup>(a)</sup>	60	23.0
<i>Did you read the Bulletin(s)?</i>				
	196	74.8	66	25.2
<i>How many Bulletins have you read?</i>				
1	28	15.9 <sup>(b)</sup>	-	-
2	53	30.1	-	-
3	63	35.8	-	-
4	22	12.5	-	-
5	10	5.7	-	-
<i>Did you find the Bulletin informative? (1=Never, 5=Always)</i>				
1	3	1.5 <sup>(2)</sup>	-	-
2	9	4.5	-	-
3	82	41.2	-	-
4	72	36.2	-	-
5	33	16.6	-	-

(a) Percentage of all respondents (i.e. 262).

(b) Percentage of respondents to that question only.

## APPENDIX N {9}

<i>Questions 7-9 Evaluation Survey - Responses Relating to the Health and Fitness Booklet?</i>				
	Yes	Per cent <sup>(a)</sup>	No	Per cent
<i>Did you view the Health and Fitness booklet?</i>				
	124	47.3	132	50.4
<i>Did you receive any free/complimentary passes to local health and fitness centres?</i>				
	45	17.2	216	82.4
<i>If you did receive a pass, did you attend a centre?</i>				
	10	3.8	37	14.1

(a) Percentage of all respondents to survey (262).

## APPENDIX N {10}

<i>Questions 10-12 Evaluation Survey - Responses Relating to Joining a Health and Fitness Centre.</i>				
	Yes	Per cent	No	Per cent
<i>Have you joined a fitness centre in the last 12 months?</i>				
	14	5.3 <sup>(a)</sup>	247	94.3
<i>If you are not a member at a club, have you attended a centre on a casual basis?</i>				
	39	14.9	203	77.5
<i>How often do you attend?</i>				
Daily	0	0 <sup>(b)</sup>		
3-5 Weekly	11	24.4		
1-2 Weekly	19	42.2		
Less than Weekly	15	33.3		

(a) Percentage of all respondents to survey (262).

(b) Percentage of respondents to this question only.

## APPENDIX N {11}

<i>Question 13 Evaluation Survey - Medium Through Which Officers Found Out About the Programme.<sup>(a)</sup></i>		
<b>Medium</b>	<b>Number</b>	<b>Per cent</b>
Bulletin/Newletter	168	64.1
Posters at Station	143	54.6
Notice Board	121	46.2
Word of Mouth	111	42.4
Mail	93	35.5
Station Readouts	48	18.3
Other <sup>(b)</sup>	45	17.2
"Police Life" Magazine	39	14.9

(a) Multiple responses permitted.

(b) "Other" includes facimilie, media outlets and computers at workplaces.

## APPENDIX N {12}

<i>Questions 14 (a) to (h) Evaluation Survey - Ways In Which the Programme Has Helped.</i>					
	1 <sup>(a)</sup>	2	3	4	5
Question					
(a) <sup>(b)</sup>	15	18	83	90	51
(b)	12	19	62	98	61
(c)	31	52	75	77	19
(d)	33	44	76	74	28
(e)	17	37	97	69	33
(f)	21	25	72	53	71
(g)	35	37	104	55	22
(h)	54	43	100	39	18

(a) Questions 14 (a) to (h) are based on the Likert scale of 1 to 5, where 1="Did not help at all" and 5="Helped very much". The scales were reversed on a random basis to prevent random responses.

(b) "In what do you think "Operation Physicop" has helped you?"

(a) More aware of health and fitness issues (1=Not at all)

(b) More aware of my own health and fitness (1=Not at all)

(c) Motivated me to take more care of myself (1=Helped very much)

(d) Changed my diet for the better (1=Not at all)

(e) Exercise more regularly (1=Helped very much)

(f) Helped me lose weight (1=Helped very much)

(g) Improved my wellbeing (1=Not at all)

(h) Improved my self-image (1=Not at all)

## APPENDIX N {13}

<i>Questions 15 and 16 Evaluation Survey - Responses Relating to Smoking.</i>				
	Yes	Per cent	No	Per cent
<i>Has the programme motivated/helped you to give up smoking?</i>				
	17	25.8	49	74.2
<i>If you have not given up, has the programme motivated/helped you to cut down?</i>				
	17	37.8	28	62.2
<i>If so, by how many (cigarettes) approximately per day?</i>				
	Mean	Minimum	Maximum	Number
	8.9	2	20	15

## APPENDIX N {14}

<i>Questions 17 and 18 Evaluation Survey - The Effect of the Programme of Work Performance (Q.17) and Station Morale (Q.18).</i>						
	1 <sup>(a)</sup> (Mean Age)	2 (Mean Age)	3 (Mean Age)	4 (Mean Age)	5 (Mean Age)	N
<b>Question</b>						
17	83 (34.1)	43 (34.9)	88 (34.4)	32 (33.3)	10 (42.2)	256
18	37 (32.8)	46 (33.3)	77 (34.7)	74 (35.1)	20 (36.7)	254

- (a) Questions 17 and 18 are based on the Likert scale of 1 to 5, where 1="Did not help at all" and 5="Helped very much".

## APPENDIX N {15}

<i>Ways Officers Thought the Programme Could Be Improved.</i>			
	Yes <sup>(a)</sup>	Per cent <sup>(b)</sup>	Mean Age
<b>Methods</b>			
More activity days	95	36.3	32.9
More breakfasts/barbecues	98	37.4	35.4
More health seminars	66	25.2	35.5
More activities run at work	125	47.7	34.4
Better communication	64	24.4	32.7
More literature circulated	91	34.7	34.2
Other	3	1.1	33.3

(a) Multiple responses were permitted.

(b) Percentage of all respondents to survey.

## APPENDIX N {16}

<i>Questions 20 and 21 Evaluation Survey - Responses relating If Project Considered Worthwhile (Q.20) and If Programme Should Be Extended Statewide (Q.21)?</i>			
	Yes (%)	No (%)	Undecided (%)
Worthwhile project	233 (89.6)	4 (1.5)	23 (8.8)
Extended statewide	231 (89.5)	6 (2.3)	21 (2.3)

## Glossary

### General Terms

**behaviour** An action that has a specific frequency, duration, and purpose, whether conscious or unconscious (Green and Kreuter, 1991).

**cost-effectiveness** A measure of the cost of an intervention relative to its impact, usually expressed in dollars per unit of effect (Green and Kreuter, 1991).

**effectiveness** The extent to which the intended effect or benefits that could be achieved under optimal conditions are achieved in practice (Green and Kreuter, 1991).

**environment** The totality of social, biological, and physical circumstances surrounding a defined quality of life, health, or behavioural goal or problem (Green and Kreuter, 1991).

**external validity** Assurance that the results of an evaluation can be generalised to other populations or settings (Green and Kreuter, 1991).

**health education** Any planned combination of learning experiences designed to predispose, enable, and reinforce voluntary behaviour conducive to health in individuals, groups, or communities (Green and Kreuter, 1991).

**health promotion** Any planned combination of educational, political, regulatory, and organisational supports for actions and conditions of living conducive to the health of individuals, groups, or communities (Green and Kreuter, 1991).

**internal validity** Assurance that the results of an evaluation can be attributed to the object (method or programme) evaluated (Green and Kreuter, 1991).

**intervention** The part of a strategy, incorporating method and technique, that actually reaches a person or population (Green and Kreuter, 1991).

**lifestyle** The culturally, socially, economically, and environmentally conditioned complex of actions characteristic of an individual, group, or community as a pattern of habituated behaviour over time that is health related but not necessarily health directed (Green and Kreuter, 1991).

**preventive health** The programmes or strategies which aim to maintain or enhance a person's health before the onset of disease or degeneration.

**programme** The activities, the practical implementation of the Risk Screening Clinic, fitness assessment, physical activities and seminars.

**Project Arbiter** A major restructuring programme within the Victoria Police aimed at improving efficiency.

**study** The entire research project, from the Risk Screening Clinic to the analysis, report and recommendations.

**target population** All police officers gazetted to the pilot district when the research project commenced on 31st of July, 1989. Officers transferring to the district after that date were not part of the target population. All officers who transferred from the district after commencement date were deemed to be still part of the target

**treatment period** That part of the programme implemented to enhance the health and fitness of the target population.

**wellness** A dimension of health beyond the absence of disease or infirmity, including social, emotional, and spiritual aspects of health (Green and Kreuter, 1991).

**workplace** Any police station or unit permanently operating within the pilot district ('Y' District) throughout the duration of the study.

**workplace health promotion** The promotion of health and fitness at an individual's workplace.

## **Rank Structure**

**constable** A Constable of Police

**senior constable** An officer one rank higher than a constable and attained after two years service (recently reduced from five years) on successful completion of examinations.

**sergeant** An officer in the first (lowest) of the supervisory ranks - responsible for constables and senior constables.

**senior sergeant** The rank above that of sergeant; generally in charge of a station or section.

**sub-officer** An officer of the rank of either sergeant or senior sergeant.

**officer** Specifically, this term means an officer of the rank of inspector or above. However, this term is also used as a generic term to describe a police officer of any rank.

**Officer-in-Charge** The highest ranking police officer at a particular station or section of the Victoria Police - in charge of that station or area.

## Anthropometric Measures

**body composition (per cent)** The predicted percentage body fat of a person.

**body mass index (kg/m<sup>2</sup>)** An index of the body's mass. It is calculated as weight (in kilograms) divided by the square of height (in metres).

**girth and width measurements** An indirect and relative measure of the extent of muscle and bone tissue at specified sites of the body.

**lean body weight (kg)** All the body's non-fat tissues including the skeleton, water, muscle and connective tissue.

**skinfold measurement** An indication of subcutaneous fat at a specific site on the body.

**weight (kg)** The total body mass of a person.

## Spirometric Measures

**forced expiratory volume (FEV)** The volume of air expelled from the lungs over a timed period from a position of maximum inspiration with the subject making a maximum effort. The usual time interval is one second (FEV<sub>1</sub>).

**forced expiratory volume per cent (FEV<sub>1</sub>%)** The FEV<sub>1</sub>% is calculated by dividing FEV by VC and expressing it as a percentage.

**forced vital capacity (FVC)** The volume of air which can be exhaled when the subject makes one maximum effort from a position of full inspiration.

**vital capacity (VC)** The volume change between inspiration and full expiration. It is performed slowly from a position of maximum inspiration to full expiration.

## Cardiorespiratory Function Measures

**physical fitness** The ability of an individual to cope with the physical demands of everyday living with enough energy in reserve to cope with unforeseen emergencies.

**predicted maximal oxygen uptake (predicted VO<sub>2</sub> max)** The predicted maximal rate of oxygen utilised by a subject during sub-maximal exercise on a bicycle ergometer during a Physical Work Capacity test. It is expressed in absolute terms (l.min<sup>-1</sup>) and in relative terms as a function of body weight (mls.kg.<sup>-1</sup>min.<sup>-1</sup>).

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## Cardiovascular Measures<sup>(1)</sup>

**atherosclerosis** The condition which underlies most cardiovascular disease. It is the thickening and roughening of the internal walls of the arteries by deposits of fibrous and fatty materials. These narrow the artery and reduce the flow of blood. Most humans from their teens onwards have atherosclerosis in some degree.

**blood pressure (mm Hg)** Blood pressure is the force exerted by the blood against the inner walls of the blood vessels. It is determined by the flow of blood and the resistance to that flow (measured in millimetres of mercury).

**cardiovascular disease** All diseases of the heart and blood vessels.

**coronary heart disease** A group of diseases including heart attack, angina, and heart failure from atherosclerosis.

**electrocardiogram (ECG)** A reading of the heart's electrical impulses taken from electrical leads placed on the chest. The reading can be printed onto a continuous strip of paper, or, as in a coronary care unit, shown on a small screen like that of a television set.

**heart attack** A sudden blockage of one of the heart's arteries, either from a build-up of atherosclerosis or the formation of a blood clot or both. Also known as myocardial infarction, coronary thrombosis or coronary occlusion.

**hypertension** High blood pressure. One of the most serious risk factors in stroke and coronary heart disease.

**mean arterial pressure (mm Hg)** The mean pressure exerted by the blood on the arteries. It is calculated by using the following formula:  $MAP = \text{Diastolic BP} + (\text{Systolic BP} - \text{Diastolic BP} \div 3)$ .

**overall coronary risk** A score calculated at the Victoria Police Risk Screening Clinic based on cholesterol, blood pressure, smoking habits and age. It is the probability of coronary heart disease mortality in 6 years (Kannel et al., 1986). The equation to calculate probability is  $p = 1/1+e^{-x}$ , where  $x = 0.1091 \times \text{age} + 0.0288 \times \text{diastolic blood pressure} + 0.308 \times \text{cholesterol} + 0.0227 \times \text{cigarettes per day} - 14.5699$ . McNeil et al., 1991 applied this equation to data from the National Heart Foundation Risk Factor Prevalence Study No. 3, 1989 and stratified the resultant probabilities into age specific percentiles.

**plasma lipids** Fatlike substances, including plasma cholesterol and triglycerides.

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<sup>1</sup> All definitions included in "Cardiovascular Measures" (except Overall Coronary Risk) are from the National Heart Foundation, (Norton, 1985).

**plasma cholesterol (mmol/L)** A fatty white substance which performs a number of useful functions and is normally present in the blood stream. It is the most abundant steroid in the human body and is characteristic of animal but not plant tissue. Atherosclerotic patches in diseased arteries contain large quantities of cholesterol. Cholesterol is manufactured in the body and is also present in certain foods, notably dairy foods, meat and egg yolk. The main dietary factor leading to high blood cholesterol is dietary fats. A level below 5.5 mmol/L is considered to be acceptable (National Heart Foundation, 1989).

**plasma triglycerides (mmol/L)** A type of fat, normally present in the bloodstream. A diet high in calories and carbohydrates will usually raise plasma triglyceride levels. If these levels are high, the risk of heart disease is high. A level below 2.0 mmol.L is considered desirable (National Heart Foundation, 1989). Obesity is a major cause of high triglycerides.

**risk factors** Characteristics often associated with our lifestyle which put us at risk of coronary heart disease and other forms of heart disease. The important avoidable risk factors are high blood fats, high blood pressure, cigarette smoking, lack of physical activity and being overweight.

**stroke** A blockage of blood supply through one of the arteries of the brain because of build-up of atherosclerosis, or formation of a clot or though haemorrhage. A stroke can cause impairment to any of the functions controlled by the brain, including muscle control, speech and vision.

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