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This is the Accepted version of the following publication

Hilland, Toni, Ridgers, N, Stratton, G, Knowles, Zoe and Fairclough, Stuart J
(2016) Origins of perceived physical education ability and worth among
English adolescents. European Physical Education Review. ISSN 1356-336X

The publisher's official version can be found at
<http://journals.sagepub.com/doi/10.1177/1356336X16673765>
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Origins of perceived physical education ability and worth among English adolescents

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Abstract

Predisposing factors of perceived Physical Education (PE) ability and perceived PE worth within the Youth Physical Activity Promotion Model are positively associated with young people's daily physical activity. The aim of this study was to qualitatively investigate the origins of students' perceived PE ability (perceived competence and self-esteem) and perceived PE worth (attitude and enjoyment). Fifty-three PE students, aged 12-14 years (mean=13.18), participated in semi-structured focus group interviews, which were recorded, transcribed and analysed inductively and deductively and represented as pen profiles. Analysis revealed three higher order themes relating to perceived PE ability (external feedback, perceptions of (in)competence and comparison against peers), and three higher order themes underpinning perceived PE worth (PE teachers, expectancy-value relationship and the physical experience of PE). PE should be perceived as interesting, relevant, and meaningful by students and provide appropriate opportunities for success so as to influence lifetime physical activity habits.

Keywords

Physical Education, predisposing factors, perceived PE ability, perceived PE worth, qualitative

Introduction

Regular physical activity is an important contributor to a healthy lifestyle and can provide immediate and long term health benefits (Powell et al., 2011; Reiner et al., 2013). Youth physical activity is inversely associated with clustering of cardiovascular disease risk factors, diastolic blood pressure and waist circumference (Ekelund et al., 2012; Lee et al., 2012). Biddle and Asare (2011) concluded that physical activity can improve young people's psychological well-being and mental health. Research therefore generally proposes that physical activity has numerous physiological and psychological benefits and that it should be promoted in youth; however, it is a consistent finding that youth do not engage in sufficient physical activity to benefit their health (Bauman et al., 2012; Hallal et al., 2012).

School Physical Education (PE) is an important setting in which to promote youth physical activity (Fairclough et al., 2012a; Hyndman et al., 2014; Lonsdale et al., 2013). PE offers a logical and plausible context for engaging youth in regular, structured physical activity, whilst also developing knowledge, skills and attitudes to enable participation in lifetime habitual physical activity (Heath et al., 2012; Trudeau and Shephard, 2005). Therefore, for PE to be impactful, it should strive to influence factors in adolescents' lives that are related to physical activity, for example perceived competence and enjoyment (Hilland et al., 2011).

Welk's (1999) Youth Physical Activity Promotion Model (YPAPM) provides a useful mediating variable framework to study physical activity correlates in a systematic way (Baranowski et al., 2003). The model is based on Green and Kreuter's (1991) Precede-Proceed health promotion planning model, which was developed to provide

guidelines for establishing health education programmes for a variety of different behaviours. The YPAPM adopts a socio-ecological framework by acknowledging the input of various influences on children's physical activity (Welk, 1999). It recognises that physical activity participation is the result of interactions among four categories of factors labelled, predisposing, enabling, reinforcing, and personal demographics (Chen et al., 2014; Silva et al., 2014).

Predisposing factors increase the likelihood that youth will engage in regular physical activity (Rowe et al., 2007) and include self-evaluative and decision-balance constructs (Welk, 1999). Fox (1991) provided a conceptualisation to unite these themes, where decisions about physical activity behaviour are reduced to two fundamental questions that young people may ask themselves when considering physical activity participation: (1) '*Am I able?*' and (2) '*Is it worth it?*' *Am I able?* encapsulates variables of how individuals think and feel about their abilities in the physical domain (e.g. perceived competence and self-efficacy) (Welk, 1999). *Is it worth it?* addresses the cost–benefit assessment of participating in physical activity (e.g. attitude and enjoyment) (Fox, 1991). It is postulated that young people who answer 'yes' to both questions are more likely to lead active lifestyles and engage in regular physical activity (Rowe et al., 2007; Welk, 1999). Although the YPAPM (Welk, 1999) aims to explain the relationships between factors affecting habitual physical activity, it may also be applied to the PE setting (Fairclough et al., 2012b).

In line with the YPAPM's (Welk, 1999) predisposing factors, Deci and Ryan's (1985) Self Determination Theory (SDT) seeks to explain and help researchers understand the motivational dynamic that drives human behaviour to take part in or avoid an

activity. Within the SDT, motivation is determined by social factors whose effect is mediated by three psychological mediators: perceptions of competence, autonomy and relatedness (Ryan and Deci, 2000). In the area of PE, studies have shown a positive relationship between self-determined motivation towards PE and physical activity outside of school (Barr-Anderson et al., 2007; Ding et al., 2006; Dupont et al., 2009; Fairclough et al., 2012c; Jaakkola et al., 2012).

Furthermore, a sub-theory of the SDT is the Cognitive Evaluation Theory (CET), which argues that feelings of competence within a particular domain will increase intrinsic motivation for that activity. It has been reported that this results in enjoyment and interest in school PE (Wang and Liu, 2007); therefore, students are more likely to exert effort and persist in the activity (Deci and Ryan, 1985; Haerens et al., 2010; Ryan and Deci, 2000). In contrast, Gray et al. (2008) found that low levels of perceived competence has a negative effect on intrinsic motivation, a key element in producing self-determined behaviour. It has also been reported that PE can leave an enduring negative effect (Cardinal et al., 2013), and that some students find PE 'humiliating frustrating, embarrassing and barely tolerable' (Portman, 1995: 452). Furthermore, research suggests that students are dissatisfied with PE because of alienation and the repetitive nature of skill-based lessons (Carlson, 1995; Lake, 2001; Smith and Parr, 2007). This may result in avoidance of physical activity outside of school and in later life (Allender et al., 2006; Dagkas and Armour, 2011). More recently, adolescents' perceived PE ability and PE worth have been found to be positively associated with daily physical activity (Hilland et al., 2011).

Welk's (1999) YPAPM has been used extensively in quantitative research, using scales, surveys and questionnaires, as a framework to evaluate physical activity correlates, levels and interventions (Ahn et al., 2015; Chen et al., 2014; Heitzler et al., 2010; Hilland et al., 2011; Seabra et al., 2013; Silva et al., 2014). However, research is needed to qualitatively explore Welk's (1999) YPAPM predisposing factors to determine the origins of adolescents' perceptions of PE ability and PE worth. Therefore, this study is novel as it allows for a more in-depth investigation of the subject area (Green and Thorogood, 2004), by exploring qualitative data aligned to the factors of the YPAPM (Welk, 1999) and with analysis outcomes presented through pen profiles. This information is critical for informing PE interventions to promote learning and for PE to meet its pedagogical aims in relation to health-enhancing physical activity. Furthermore, this research can also be used by PE teachers to help improve their practice. Therefore, the aim of this study was to investigate the origins of Year 8 and 9 students' perceived PE ability (perceived competence and self-efficacy) and PE worth (attitude and enjoyment). Young people in this age group were selected as they are at the stage of early adolescence when physical activity levels and interests are known to decrease (Riddoch et al., 2004; Sherar et al., 2007).

Methods

Participants and settings

Fifty-three students (42 girls; aged 12-14 years) in Years 8 and 9 from three suburban state schools (one single sex, two co-educational) in the North West of England participated in this study. The students were purposefully selected based on their teacher's normative ratings of their PE ability, which is an example of using

professional knowledge and insight to inform the research process. Teachers were asked to rate their students on a 3-point Likert scale anchored by *below average ability* (1), and *above average ability* (3) based upon key stage 3 attainment targets, where pupils are expected to know, apply and understand the matters, skills and processes specified in the programme of study (Department for Education, 2013). In addition, the students completed the Physical Education Predisposition Scale (Hilland et al., 2009) to assess their perceptions of their PE ability, which matched the teachers' ratings. This research was part of a larger ongoing study; therefore, this qualitative paper comprises of a sub-sample of students from that study.

Students stated on their consent forms if they were willing to participate in the focus group interviews. They were then invited to participate. This resulted in three groups with below average PE ability, four groups with average PE ability, and five groups with above average PE ability, which provided a representative range of students spanning the ability range. As this study aimed to understand the views and opinions from students representing a range of ability levels, focus groups were conducted based on PE ability, stratified by gender. Students were therefore grouped in their normal PE classes with the presence of friends to foster open and confident expressions of opinion (Sleap and Wormald, 2001). Consequently, four groups from each school, comprising three to six students (see Table 1) participated in this study. The project received institutional ethics committee approval, and written parental consent and student assent were obtained prior to data collection.

Table 1. Breakdown of the focus groups, by school, gender, year group and ability level.

School A	School B	School C
Yr 8 girls average ability (n = 5)	Yr 8 boys below average ability (n = 4)	Yr 8 girls average ability (n = 5)
Yr 8 girls below average ability (n = 5)	Yr 8 girls above average ability (n = 3)	Yr 8 girls above average ability (n = 5)
Yr 9 girls above average ability (n = 6)	Yr 9 boys average ability (n = 3)	Yr 9 girls above average (n = 4)
Yr 9 girls below average ability (n = 5)	Yr 9 girls average ability (n = 4)	Yr 9 boys above average ability (n = 4)

Data collection

The students participated in in-depth focus group interviews that explored the origins of their perceptions of PE ability and PE worth. A flexible semi-structured focus group interview schedule was developed from Welk's (1999) YPAPM. Example questions are presented in Table 2, which demonstrate aspects of face validity. The research team have extensive experience of working with children and conducting research on topics similar to that explored in the current study (Fairclough and Stratton, 2005; Knowles et al., 2013; Noonan et al., 2016; Ridgers et al., 2012). Prior to data collection the focus group interview questions were assessed independently by the authors, a group meeting then took place to reach a collective consensus that the questions were age appropriate and would answer the research questions. The focus groups lasted 25-60 (mean = 36.8) minutes, and were conducted during regular school PE hours in a quiet gym, sports hall or dance studio where the students could be overlooked but not overheard. Opportunities were provided at the end of each session for students to make further comments about issues that had

not been covered. The first author conducted all 12 focus group interviews. They were recorded by Dictaphone and transcribed verbatim with any identifying characteristics to the participants, schools or non-participants removed.

Table 2. Example focus group questions aligned to Welk's (1999) YPAPM.

Predisposing, perceived PE ability	<i>Which activities/sports in school PE do you feel confident in, and why?</i> <i>Which activities/sports in school PE do you feel not so confident in, and why?</i>
Predisposing, perceived PE worth	<i>Which activities/sports are your favourite in school PE, and why?</i> <i>Which activities/sports are your least favourite in school PE, and why?</i>

Data analysis

The focus groups were transcribed and created 292 pages of typeset data Arial font, size 12, double spaced. NVivo software (version 11) was used to facilitate data management and retrieval. Thematic analysis of the data followed Green et al.'s (2007) phases of data immersion, coding, creating categories and identifying themes. Each transcript was read several times by two of the research team, who independently analysed the data using a deductive approach, based on Welk's (1999) YPAPM and the study's research questions. A subsequent inductive approach was then employed to enable emergent themes to be further explored (Biddle et al., 2001; Smith and Caddick, 2012). Data were then cross-examined by the whole research team until a consensus was reached, comparing and contrasting meaningful quotes, clustering quotes into categories and highlighting common

themes between participants. The outcomes of this analysis process were then represented via pen profiles, which provide an efficient method of presenting outcomes using diagrams, verbatim quotes and frequency data of key themes by participant (Knowles, 2009; Ridgers et al., 2012). Pen profiles have been used with previous PE and physical activity research and is considered as an appropriate method for representing outcomes of analysis (Boddy et al., 2012; Houghton et al., 2015; Mackintosh et al., 2011; Noonan et al., 2016). Methodological rigor, credibility and transferability were achieved via verbatim transcription of the data, triangular consensus and reverse tracking procedures employed from pen profile to transcript. Results are presented below describing the two general dimensions of perceived PE ability and PE worth, and the associated higher and lower order themes. Verbatim quotes are included for illustration.

Results

Figure 1 displays the higher order themes relating to the general dimension of perceived PE ability. There are three higher order themes: external feedback (n=38), perceptions of (in)competence (n=31) and comparison against peers (n=15). Positive and negative lower order themes featured in both the comparison against peers and perceptions of (in)competence themes. External feedback involved lower order themes of teachers, peers, awards and success. Figure 2 displays the higher order themes relating to general dimension of perceived PE worth. There are three higher order themes: PE teachers (n=52), the physical experience of PE (n=29), and the expectancy-value relationship (n=21). Positive and negative lower order themes featured in all three of the higher order themes.

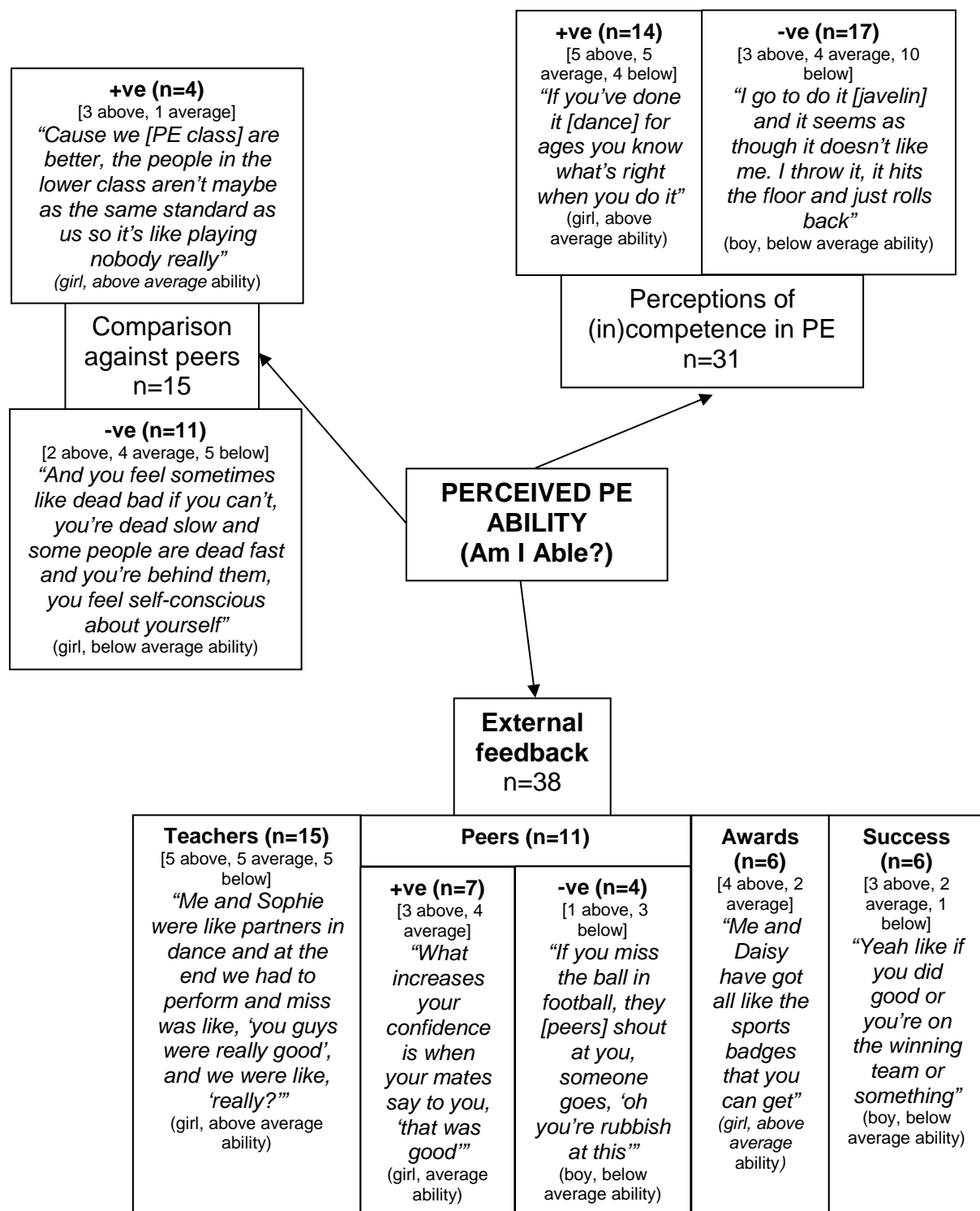


Figure 1. Overview of higher and lower order themes relating to the general dimension of perceived PE ability.

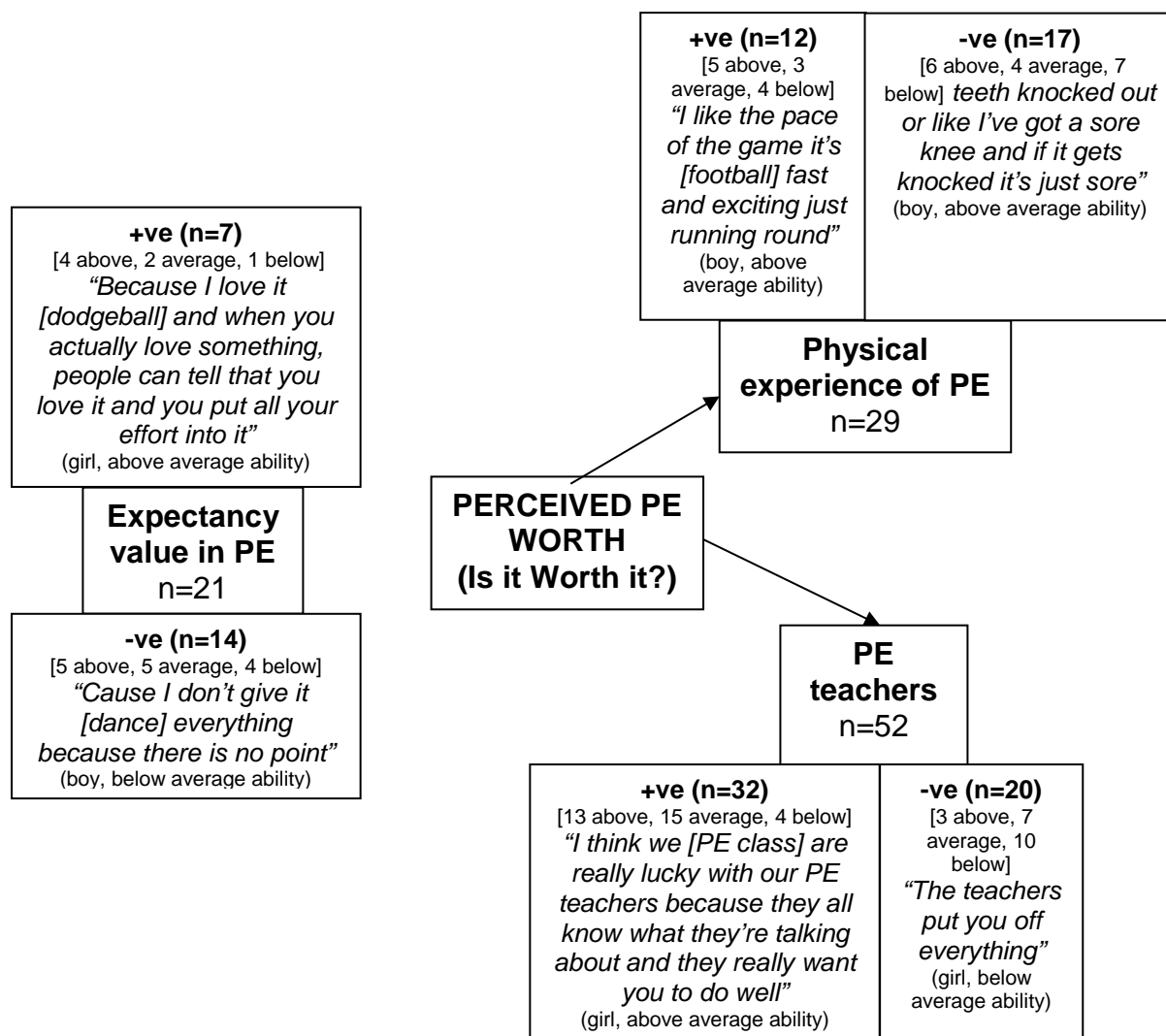


Figure 2. Overview of higher and lower order themes relating to the general dimension of perceived PE worth.

Discussion

This study explored the origins of students' perceived PE ability and PE worth using focus group interviews based on PE ability, stratified by gender. Students reported that their perceived PE ability emerged from higher order themes including, external feedback, perceptions of (in)competence and comparison against peers. Whereas PE teachers, the physical experience of PE and the expectancy value relationship of participating in PE represented their perceived PE worth.

286

287 *Perceived PE ability*

288 The students conveyed that their perceptions of PE ability originated from external
289 feedback via a plethora of foundations, including teachers (n=15), peers (n=11),
290 awards (n=6) and success (n=6). Types of positive feedback from teachers and
291 peers included praise, encouragement, support and constructive criticism. For
292 example: 'We [PE class] get a lot of encouragement off the teachers and all that
293 always makes you feel better, and always boosts your confidence' (girl, above
294 average ability). This positive feedback appeared to enhance the students'
295 perceptions of PE ability. For example: 'I feel more confident and want to do it [PE]
296 more when I'm told I'm good' (above average girl).

297

298 This is in agreement with previous research in this area (Koka and Hagger, 2010;
299 Koka and Hein, 2005; Wilson and Rodgers, 2004), and is consistent with Deci and
300 Ryan's SDT (1985, 2000). Those teachers who frequently provide positive and
301 encouraging feedback are more likely to facilitate development of a higher level of
302 perceived competence in their students (Koka and Hein, 2003). Nicaise et al. (2006)
303 state that what adults say in response to adolescents' performances can positively or
304 negatively influence perceptions of competence. There were also comments with
305 regards to negative feedback from peers, which also had an effect on the students'
306 perceived PE ability. These often involved offensive and derogatory comments and
307 criticism which instigated negative beliefs about perceptions of PE ability. For
308 example: 'It's a bit of a down putter isn't it sometimes when you're trying your
309 hardest and your classmates are at you, and like nagging you when you didn't do it
310 [passing in football] right' (boy, average ability).

311

312 External feedback also emerged from success in PE, whereby students related their
313 perceptions of PE ability to being on the winning team, intercepting a pass in netball
314 or getting a rounder. For example: 'I know I can bowl and field and I know I can get a
315 rounder' (girl, above average ability). Awards, badges and credits also bolstered
316 perceptions of PE ability. For example: 'Well me and Ben are going for a sports
317 award tonight, just to say that you've been doing good in sport this year, so it's good
318 to know that you have been noticed' (boy, above average ability). This in line with
319 Bernstein et al.'s (2011) findings that success and awards are an influential
320 mechanism in affecting students' attitudes and perceptions toward a subject.

321

322 Another higher order theme relating to perceptions of PE ability involved both
323 perceptions of competence (n=14) and incompetence (n=17). Skill competence was
324 highlighted through perceptions of being confident and able, as an average ability
325 boy stated, 'I'm good at football', and also through observing improvement and
326 development in their skills and ability over time. For example:

327

328 Like dance, when we [PE class] first came to the school like not many of us could do dance
329 could we, some of us had never tried dance before like and we came to this school and we
330 got to learn more how to do it [dance] and stuff like that (girl, average ability).

331

332 It has been documented that the ability to perform skills, such as throwing, kicking
333 and jumping, is considered an important prerequisite to sport and physical activity
334 participation (Stodden et al., 2008). In contrast a number of students (n=17) referred
335 to their incompetence: 'I'm just not very good at kicking the ball'; 'I can't really throw
336 that far'; 'I really cannot catch at all'; and, 'I can't run'. Consistent with these quotes,

337 Silverman (1993) concluded that students who have lower skill levels often have
338 difficulty performing a skill in class and do not receive adequate appropriate practice
339 trials. Comments were also made about the students' swimming and dance skills in
340 the current study. For example:

341

342 I couldn't swim to save my life so I just said, "I can't swim", so I could get in the little pool
343 'cause I don't want to make a show of myself in the big one. So the teacher had to get in the
344 pool with me (girl, below average ability).

345

346 The students also reported determining their levels of perceived PE ability by
347 comparing their abilities and performances against other students in their PE class
348 (n=15). For example: 'Everyone else got to go in the deep pool and our class were
349 still stood in the shallow pool' (below average ability girl). This is in agreement with
350 research by Chanal et al. (2005) who stated that individuals use the performances of
351 classmates to establish frames of reference for evaluating their own performances
352 and competencies. These comparisons foster both positive and negative feelings
353 about PE competence. For example: 'When you think you're doing something good
354 like and you look at Chloe and she's doing it perfect and she's getting the praise'
355 (girl, below average ability), and, 'Yeah, when like we have like a set sort of drill in
356 class I like stand out compared to the others, it's really easy' (boy, above average
357 ability). Barnes and Spray (2013) suggest that PE lessons are rife with social
358 comparison information. Within the current study this social comparison promoted
359 positive and negative feelings about students' PE competence depending upon their
360 self-perceptions of ability. It has been proposed that some children are motivated to
361 compare by the desire to self-improve, evaluate, and enhance whereas others are

not as they may be disaffected and disengaged (Barnes and Spray, 2013; Butler, 1992; Lubbers et al., 2009).

Perceived PE worth

Students (n=32) reported numerous positive comments with regards to their PE teachers, stating that they are supportive, lovely, enthusiastic and knowledgeable, with the majority of these students (88%) either average or above average ability. Examples include that their PE teachers 'are just like your best mates really' and, 'they [PE teachers] are very supportive so they increase my enjoyment, they always push you but they care about you as well, so they're very, very supportive' (girl, above average ability). Teachers have a very powerful influence and impact on students' attitudes towards PE (Carlson, 1995; Lake, 2001), for example, Barney (2003) concluded that teachers positively affect student attitudes towards PE. These findings are comparable to Ryan et al.'s (2003) study which reported the qualities students most liked about their PE teachers were that they have good physical skills, are friendly and know the subject matter. However, this study utilised a 40-item questionnaire with a five-point Likert scale to assess students' attitudes towards their PE teachers and classes.

A number of students (n=20) identified that their PE teachers have a negative impact upon their perceived PE worth, with 50% of these students below average ability. They conveyed that teachers showed favouritism, lacked consideration, and are threatening and patronising. For example: 'Mr A. does shout a lot, if you do something in a lesson and you're not supposed to do it he like shouts a bit more than he should do. I hate him, he makes you feel like dead small' (boy, below average

ability). This concurs with Myers and Knox (1999) who reported a negative relationship between perceived use of verbal aggression (e.g. threats, ridicule and negative comparison) by the teacher and student affect toward the teacher. Negative associations between verbal aggression and student outcomes of motivation and satisfaction have been previously reported (Myers, 2002; Myers and Rocca, 2000). Similarly, Ryan et al.'s (2003) study reported qualities that students disliked most about their PE teachers, which included that they used cutting remarks, showed favouritism to skilled students, and could not relate to students. Furthermore, Strean's (2009) participants reported negative memories of verbal abuse, fear, and elitism within PE. As an example a student from the current study stated: 'We're [PE class] like the least favourites, we're like the bench people, if she [PE teacher] had to put everyone on a team I don't think I'd even get put on a bench' (girl, below average ability).

Another higher order theme to emerge involved the physical experience of PE (n=29), with 12 students (67% average and above average ability) stating that they liked and enjoyed the inherent physical nature of PE. For example: 'We'll [PE class] have a laugh and run around and go wild don't we? It's so good' (girl, above average ability). This is consistent with Arnold's (1979, 1988) concept of 'in movement' which refers to activities of movement and physical activity as worthwhile in and of themselves. Enjoyment of PE has also been found to be a major indicator of positive student attitudes (Azzarito et al., 2006; Subramaniam and Silverman, 2007). These results support the basic tenets of Deci and Ryan's (1985) CET and SDT. In contrast a number of students (n=17, 42% below average ability), disliked the physical experience of PE, due to the potential injury and pain that they may

412 experience whilst participating. For example: 'I don't like it [dodgeball] 'cause I
413 always get hit in it' (girl, above average ability).

414

415 The final key theme of perceived PE worth involved the expectancy-value
416 relationship of participating in PE (n=21), with those who like, love, and enjoy PE
417 reporting putting in more effort and concentration (86% average and above average
418 ability). For example: 'We [PE class] concentrate more because we want to do well
419 in those sports' (girl, above average ability). These results are consistent with Eccles
420 et al.'s (1983) Expectancy-Value Theory (EVT) whereby students' choice,
421 persistence, performance and effort are influenced by beliefs about how well they will
422 do (expectancy beliefs) and the extent to which they value the activity (task value)
423 (Eccles and Wigfield, 1995; Gao et al., 2008). Therefore, students like and
424 intrinsically value activities in which they have excelled previously, and in which they
425 are confident of being successful (Xiang et al., 2003). For example: 'We [PE class]
426 put more effort into it [netball] 'cause we like it and are good at it' (girl, average
427 ability).

428

429 Additionally, it is a consistent finding that if adolescents experience fun and
430 enjoyment, they are more likely to participate, persist, exert effort and be committed
431 to that particular activity (Gao et al., 2012; Seabra et al., 2012; Wallhead et al.,
432 2012). On the other hand those who disliked PE and felt that there was 'no point'
433 appeared to exert less effort during PE and have a negative attitude towards it
434 (n=14). For example: 'When we [PE class] do lacrosse, we just can't be bothered; we
435 don't try as hard' (girl, below average ability). Participants disliked and did not value

activities that they have performed poorly in; therefore, they chose to withdraw which helps maintain their self-esteem (Eccles and Wigfield, 1995; Yli-Piipari et al., 2013).

Conclusion

The strengths of this study were that it was underpinned by the YPAPM (Welk, 1999) and that the results align with Deci and Ryan's (1985) SDT and Eccles et al. (1983) EVT. Methodologically, the focus groups were deemed to be an appropriate data collection technique for compliance with ethical and school safeguarding procedures. Focus groups assembled students within their normal PE classes so as to create an environment whereby the students could talk openly and freely in the presence of peers with whom they felt comfortable (Sleap and Wormald, 2001). Whilst the study was focused on the individual students' perceptions of PE worth and PE ability, a consensus was explored in the focus groups which will influence class level intervention. Students identified as high, average and low ability were involved in the focus group interviews, which allowed origins of perceived PE worth and PE ability to be explored from a range of students. The secondary school students who made up the sample were predominantly white British. Also, the convenience sampling at the schools, in which one was an all girls' school, meant that more girls (42) than boys (11) were involved in the focus groups; therefore, care should be exercised in making attempts to generalise findings beyond this group.

Origins of perceived PE ability and PE worth can influence an individual's decision to begin or to continue participation in an activity, and so are useful as a means of understanding young people's physical activity intentions (Martin et al., 2007; Shen et al., 2012). In reviews, physical activity intentions have been strongly associated

with physical activity behaviour (McEachan et al., 2011; Nigg et al., 2011). Therefore, it remains important to listen to the voices of school students regarding their experiences within PE. The present study provides a wealth of detail with regards to how PE teachers influence their students' perceived PE worth and PE ability, which may be used in intervention design to influence a change in curriculum and practice. This knowledge can be used by PE teachers to enhance their practice with regards to physical activity engagement of students. For example, teachers should provide enjoyable opportunities for success, whilst also ensuring their students understand the value and importance of PE. This can be achieved by providing a range of differentiated tasks and activities for students to develop their skills and competencies, whilst ensuring there is an emphasis on fun. In addition, these tasks and activities should promote wider values (social interaction, respect, cooperation, teamwork etc.), which enhance the PE experience and also help promote lifetime physical activity participation beyond PE and school.

486 **Acknowledgements**

487 The authors thank all of the students who participated in this study.

488

489 **Declaration of conflicting interests**

490 The Authors declares that there is no conflict of interest.

491

492 **Funding acknowledgements**

493 This research received no specific grant from any funding agency in the public, commercial, or not-
494 for-profit sectors.

495

496 **Author biographies**

497 Toni A Hilland - primarily interested in children's physical activity and health, and in particular PE and
498 the promotion of physically active youth.

499 Nicola D Ridgers - research focus is in patterns of children's physical activity and sedentary
500 behaviours.

501 Gareth Stratton – areas of expertise is in paediatric exercise science, he is principally interested in
502 translational research and evidence based practice.

503 Zoe R Knowles - focus of her research has turned to paediatric fields including both active and natural
504 based play in pre-school and school age children and psycho-social determinants of physical activity
505 in special populations.

506 Stuart J Fairclough – mainly interested in children's physical activity, sedentary behaviour, and health,
507 and in particular interventions to modify behaviours.

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516 **References**

- 517 Ahn SJ, Johnsen K, Robertson T, et al. (2015) Using virtual pets to promote physical activity in
518 children: An application of the Youth Physical Activity Promotion Model. *Journal of Health*
519 *Communication* 20: 807-815.
- 520 Allender S, Cowburn G, and Foster C (2006) Understanding participation in sport and physical activity
521 among children and adolescents: A review of qualitative studies. *Health Education Research* 21(6):
522 826-835.
- 523 Arnold PJ (1979) *Meaning in Movement, Sport and Physical Education*. London: Heinemann.
- 524 Arnold PJ (1988) *Education, Movement and the Curriculum – A Philosophic Inquiry*. London: The
525 Falmer Press.
- 526 Azzarito L, Solmon MA, and Harrison L (2006) “If I had a choice, I would...” A feminist poststructuralist
527 perspective on girls in Physical Education. *Research Quarterly for Exercise and Sport* 77(2): 222-239.
- 528 Baranowski T, Cullen KW, Nicklas T, et al. (2003) Are current health behavioural change models
529 helpful in guiding prevention of weight gain efforts? *Obesity Research* 11: 23s-43s.
- 530 Barnes JS, and Spray CM (2013) Social comparison in physical education: An examination of the
531 relationship between two frames of reference and engagement, disaffection, and physical self-
532 concept. *Psychology in the Schools* 50(10): 1060-1072.
- 533 Barney D (2003) Factors that impact middle school students’ attitudes and perceptions in Physical
534 Education. *Research Quarterly for Exercise and Sport* 74(1): A-36.
- 535 Barr-Anderson DJ, Young DR, Sallis JF, et al. (2007) Structured physical activity and psychosocial
536 correlates in middle-school girls. *Preventive Medicine* 44: 404-409.
- 537 Bauman AE, Reis RS, Sallis JF, et al. (2012) Correlates of physical activity: why are some people
538 physically active and others not. *Lancet* 380(9838): 258-271.
- 539 Bernstein E, Phillips SR, and Silverman S (2011) Attitudes and perceptions of middle school students
540 toward competitive activities in physical education. *Journal of Teaching in Physical Education* 30: 69-
541 83.
- 542 Biddle SJH, and Asare M (2011) Physical activity and mental health in children and adolescents: a
543 review of reviews. *British Journal of Sports Medicine* 45: 886-895.
- 544 Biddle SJH, Markland D, Gilbourne D, et al. (2001) Research methods in sport and exercise
545 psychology: quantitative and qualitative issues. *Journal of Sports Sciences* 19(10): 777-809.

546 Boddy LM, Knowles ZR, Davies IG, et al. (2012) Using formative research to develop the healthy
 547 eating component of the CHANGE! School-based curriculum intervention. *BMC Public Health* 12:
 548 710-720.

549 Butler R (1992) What young people want to know when: Effects of mastery and ability goals on
 550 interest in different kinds of social comparisons. *Journal of Personality and Social Psychology* 62:
 551 934-943.

552 Cardinal BJ, Yan Zi, and Cardinal MK (2013) Negative experiences in Physical Experiences and
 553 Sport: How much do they affect physical activity participation later in life? *Journal of Physical*
 554 *Education, Recreation and Dance* 84(3): 49-53.

555 Carlson TB (1995) We hate gym: Student alienation from physical education. *Journal of Teaching in*
 556 *Physical Education* 14: 467-477.

557 Chanal JP, Marsh HW, Sarrazin PG, et al. (2005) Big-fish-little-pond effects on gymnastics self-
 558 concept: Social comparison processes in a physical setting. *Journal of Sport and Exercise*
 559 *Psychology* 27: 53-70.

560 Chen S, Welk GJ, and Joens-Matre RR (2014) Testing the Youth Physical Activity Promotion Model:
 561 Fatness and fitness as enabling factors. *Measurement in Physical Education and Exercise Science*
 562 18: 1-15.

563 Dagkas S, and Armour K (2011) *Inclusion and exclusion through youth sport*. New York: Routledge.

564 Deci EL, and Ryan RM (1985) *Intrinsic motivation and self-determination in human behavior*. New
 565 York: Plenum Press.

566 Deci EL, and Ryan RM (2000) The “what” and “why” of goal pursuits: Human needs and the self-
 567 determination of behavior. *Psychological Inquiry* 11: 227-268.

568 Department for Education (2013) National curriculum in England: PE programmes of study. Retrieved
 569 from [http://www.gov.uk/government/publications/national-curriculum-in-england-physical-education-](http://www.gov.uk/government/publications/national-curriculum-in-england-physical-education-programmes-of-study)
 570 [programmes-of-study](http://www.gov.uk/government/publications/national-curriculum-in-england-physical-education-programmes-of-study).

571 Ding S, Wright PM, and Li W (2006) Exploring the relationship between a caring climate and student
 572 attitudes toward Physical Education in an urban high school. *Research Quarterly for Exercise and*
 573 *Sport* 77(1): Supplement 1.

574 Dupont J-P, Carlier G. Gerard P, et al. (2009) Teacher-student negotiations and its relation to physical
 575 education students' motivational processes: An approach based on self-determination theory.
 576 *European Physical Education Review* 15(1), 21-46.

577 Eccles JS, Adler TF, Futterman R, et al. (1983) Expectancies, values and academic behaviors. In:
 578 Spence JT (ed) *Achievement and achievement motives*. San Francisco: W. H. Freeman, pp.75-146.

579 Eccles JS, and Wigfield A (1995) In the mind of the actor: The structure of adolescents' achievement
 580 task values and expectancy-related beliefs. *Personality and Social Psychology Bulletin* 21(3): 215-
 581 225.

582 Ekelund U, Luan J, Sherar LB, et al. (2012) Association of moderate to vigorous physical activity and
 583 sedentary time with cardiometabolic risk factors in children and adolescents. *Journal of the American*
 584 *Medical Association* 307(7): 704-712.

585 Fairclough SJ, Beighle A, Erwin H, et al. (2012a) School day segmented physical activity patterns of
 586 high and low active children. *BMC Public Health* 12: 406-418.

587 Fairclough SJ, Hilland TA, Stratton G, et al. (2012b) 'Am I able? Is it worth it?' Adolescent girls'
 588 motivational predispositions to school physical education: Associations with health-enhancing
 589 physical activity. *European Physical Education Review* 18(2): 147-158.

590 Fairclough SJ, Ridgers ND, and Welk G (2012c) Correlates of children's moderate and vigorous
 591 physical activity during weekdays and weekends. *Journal of Physical Activity and Health* 9(1): 129-
 592 137.

593 Fairclough SJ, and Stratton G (2005) 'Physical education makes you fit and healthy.' Physical
 594 education's contribution to young people's activity levels. *Health Education Research* 20(1): 14-23.

595 Fox K (1991) Motivating children for physical activity: Towards a healthier future. *Journal of Physical*
 596 *Education, Recreation and Dance* 62(7): 34-38.

597 Gao Z, Lee AM, and Harrison L (2008) Understanding students' motivation in sport and physical
 598 education: From the expectancy-value model and self-efficacy theory perspective. *Quest* 60: 236-254.

599 Gao Z, Podlog L, and Huang C (2012) Associations among children's situational motivation, physical
 600 activity participation, and enjoyment in an active dance video game. *Journal of Sport and Health*
 601 *Science* 2(2): 122-128.

602 Gray S, Sproule J, and Wang CKJ (2008) Pupils' perceptions of and experiences in team invasion
603 games: A case study of a Scottish secondary school and its three feeder primary schools. *European*
604 *Physical Education Review* 4(2): 179-201.

605 Green LW, and Kreuter MW (1991) *Health promotion planning. An educational and environmental*
606 *approach*. Mayfield Publishing Company.

607 Green J, and Thorogood N (2004) *Qualitative health methods for health research*. London: SAGE
608 Publications.

609 Green H, Willis K, Hughes E, et al. (2007) Generating best evidence from qualitative research: the
610 role of data analysis. *Australian and New Zealand Journal of Public Health* 31(6): 545-550.

611 Hallal PC, Andersen LB, Bull FC, et al. (2012) Global physical activity levels: surveillance progress,
612 pitfalls, and prospects. *Lancet* 380(9838): 247-257.

613 Haerens L, Kirk D, Cardon G, et al. (2010) Motivational profiles for secondary school physical
614 education and its relationship to the adoption of a physically active lifestyle among university students.
615 *European Physical Education Review* 16(2): 117-139.

616 Heath GW, Parra-Perez DC, Sarmiento OL, et al. (2012) Evidence-based intervention in physical
617 activity: lessons from around the world. *Lancet* 380: 272-281.

618 Heitzler CD, Lytle LA, Erickson DJ, et al. (2010) Evaluating a model of Youth Physical Activity.
619 *American Journal of Health Behaviors* 34(5): 593-606.

620 Hilland TA, Ridgers ND, Stratton G, et al. (2011) Associations between selected demographic,
621 biological, school environmental and Physical Education based correlates, and adolescent physical
622 activity. *Pediatric Exercise Science* 23: 61-71.

623 Hilland TA, Stratton G, Vinson D, et al. (2009) The physical education predisposition scale:
624 preliminary development and validation. *Journal of Sports Sciences* 27(14): 1555-1563.

625 Houghton LJ, O'Dwyer M, Foweather L, et al. (2015) An impact and feasibility evaluation of a six-
626 week (nine hour) active play intervention on fathers' engagement with their preschool children. *Early*
627 *Child Development and Care* 185(2): 244-266.

628 Hyndman BP, Benson AC, Ullah S, et al. (2014) Evaluating the effects of the Lunchtime Enjoyment
629 Activity and Play (LEAP) school playground intervention on children's quality of life, enjoyment and
630 participation in physical activity. *BMC Public Health* 14(1): 164-180.

631 Jaakkola T, Washington T, and Yli-Piipari S (2012). The association between motivation in school
632 physical education and self-reported physical activity during Finnish junior high school: A self-
633 determination theory approach. *European Physical Education Review* 19(1): 127-141.

634 Knowles Z (2009) *Exploring the themes and processes of reflection: enhancing professional training*
635 *curricula in higher education and sports social sciences*. PhD Thesis, Liverpool John Moores
636 University, UK.

637 Knowles ZR, Ridgers ND, Parnell D, et al. (2013) Learning from the experts: Exploring playground
638 experience and activities using a write and draw technique. *Journal of Physical Activity and Health*
639 3(10): 405-415.

640 Koka A, and Hagger MS (2010) Perceived teaching behaviours and self-determined motivation in
641 physical education: A test of self-determination theory. *Research Quarterly for Exercise and Sport*
642 81(1): 74-86.

643 Koka A, and Hein V (2003) Perceptions of teacher's feedback and learning environment as predictors
644 of intrinsic motivation in physical education. *Psychology of Sport and Exercise* 4: 333-346.

645 Koka A, and Hein V (2005) The effect of perceived teacher feedback on intrinsic motivation in
646 physical education. *International Journal of Sport Psychology* 36: 91-106.

647 Lake J (2001) Young people's conceptions of Sport, Physical Education and Exercise: Implications for
648 Physical Education and the promotion of health-related exercise. *European Physical Education*
649 *Review* 7(1): 80-91.

650 Lee I-M, Shiroma EJ, Lobelo F, et al. (2012) Effect of physical inactivity on major non-communicable
651 diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* 380(9838): 219-
652 229.

653 Lonsdale C, Rosenkranz RR, Peralta LR, et al. (2013) A systematic review and meta-analysis of
654 interventions designed to increase moderate-to-vigorous physical activity in school physical education
655 lessons. *Preventive Medicine* 56: 152-161.

656 Lubbers MJ, Kuyper H, and Van der Werf MPC (2009) Social comparison with friends versus non-
657 friends. *European Journal of Social Psychology* 39: 52-68.

658 McEachan RRC, Conner M, Taylor NJ, et al. (2011) Prospective prediction of health-related behaviors
659 with the theory of planned behavior: A meta-analysis. *Health Psychology Review* 5: 97-144.

660 Mackintosh KA, Knowles ZR, Ridgers ND, et al. (2011). Using formative research to develop
 661 CHANGE!: A curriculum-based physical activity promoting intervention. *BMC Public Health* 11: 831-
 662 843.

663 Martin JJ, Oliver KL, and McCaughtry N (2007) The Theory of Planned Behaviour: Predicting physical
 664 activity in Mexican American children. *Journal of Sport and Exercise Psychology* 29: 225-238.

665 Myers SA (2002) Perceived aggressive instructor communication and student state motivation,
 666 learning, and satisfaction. *Communication Reports* 15: 113-121.

667 Myers SA, and Knox RL (1999) Verbal aggression in the college classroom: Perceived instructor use
 668 and student affective learning. *Communication Quarterly* 47: 33-45.

669 Myers SA, and Rocca KA (2000) Students state motivation and instructors' use of verbally aggressive
 670 messages. *Psychological Reports* 87: 291-294.

671 Nicaise V, Cogérino G, Bois J, et al. (2006) Student's perceptions of teacher feedback and physical
 672 competence in Physical Education classes: Gender effects. *Journal of Teaching in Physical Education*
 673 25: 36-57.

674 Nigg CR, Geller KS, Motl RW, et al. (2011) A research agenda to examine the efficacy and relevance
 675 of the Transtheoretical Model for physical activity behavior. *Psychology of Sport and Exercise* 12: 7-
 676 12.

677 Noonan RJ, Boddy LM, Fairclough SJ, et al. (2016) Write, draw, show, and tell: a child-centred dual
 678 methodology to explore perceptions of out-of-school physical activity. *BMC Public Health* 16(1): 1-19.

679 Portman PA (1995) Who is having fun in Physical Education classes? Experiences of sixth-grade
 680 students in elementary and middle schools. *Journal of Teaching in Physical Education* 14: 445-453.

681 Powell KE, Paluch AE, and Blair SN (2011) Physical activity for health: What kind? How much? How
 682 intense? On top of what? *Annual Review of Public Health* 32: 349-365.

683 Reiner M, Niermann C, Jekauc D, et al. (2013) Long-term health benefits of physical activity – a
 684 systematic review of longitudinal studies. *BMC Public Health* 13: 813-822.

685 Riddoch CJ, Andersen LB, Wedderkopp N, et al. (2004) Physical activity levels and patterns of 9- and
 686 15-yr-old European children. *Medicine and Science in Sports and Exercise* 36(1): 86-92.

687 Ridgers ND, Knowles ZR, and Sayers J (2012) Encouraging play in the natural environment: A child-
 688 focused case study of Forest School. *Children's Geographies* 10(1): 49-65.

689 Rowe DA, Raedeke TD, Wiersma LD, et al. (2007) Investigating the youth physical activity promotion
690 model: Internal structure and external validity evidence for a potential measurement model. *Pediatric*
691 *Exercise Science* 19: 420-435.

692 Ryan RM, and Deci EL (2000) Self-determination theory and the facilitation of intrinsic motivation,
693 social development, and well-being. *American Psychologist* 55(1): 68-78.

694 Ryan S, Fleming D, and Maina M (2003) Attitudes of middle school students towards their Physical
695 Education teachers and classes. *The Physical Educator* 60: 28-42.

696 Seabra AC, Maia J, Seabra AF, et al. (2013) Evaluating the Youth Physical Activity Promotion Model
697 among Portuguese elementary schoolchildren. *Journal of Physical Activity and Health* 10: 1159-1165.

698 Seabra AC, Seabra AF, Mendonca DM, et al. (2012) Psychosocial correlates of physical activity in
699 school children aged 8-10 years. *European Journal of Public Health* 23(5): 794-798.

700 Shen B, Rinehart-Lee T, McCaughtry N, et al. (2012) Urban African-American girls' participation and
701 future intentions towards Physical Education. *Sex Roles* 67(5): 323-333.

702 Sherar LB, Esliger DW, Baxter-Jones AD, et al. (2007) Age and gender differences in youth physical
703 activity: does physical maturity matter? *Medicine and Science in Sports and Exercise* 39: 830-835.

704 Silva P, Lott R, Mota J, et al. (2014) Direct and Indirect Effects of Social Support on Youth Physical
705 Activity Behavior. *Pediatric Exercise Science* 26(1): 86-94.

706 Silverman S (1993) Student characteristics, practice, and achievement in physical education. *The*
707 *Journal of Educational Research* 87(1): 54-61.

708 Sleap M, and Wormald H (2001) Perceptions of physical activity among young women aged 16 and
709 17 years. *Physical Education and Sport Pedagogy* 6(1): 26-37.

710 Smith B, and Caddick N (2012) Qualitative methods in sport: a concise overview for guiding social
711 scientific sport research. *Asia Pacific Journal of Sport and Social Science* 1(1): 60-73.

712 Smith A, and Parr M (2007) Young people's views on the nature and purposes of Physical Education:
713 A sociological analysis. *Sport, Education and Society* 12(1): 37-58.

714 Stodden DF, Goodway JD, Langendorfer SJ, et al. (2008) A developmental perspective on the role of
715 motor skill competence in physical activity: An emergent relationship. *Quest* 60: 290-306.

716 Strean WB (2009) Remembering instructors: Play, pain and pedagogy. *Qualitative Research in Sport*
717 *and Exercise* 1: 210-220.

718 Subramaniam PR, and Silverman S (2007) Middle school students' attitudes toward physical
 719 education. *Teaching and Teacher Education* 23: 602-611.

720 Trudeau F, and Shephard RJ (2005) Contribution of school programmes to physical activity levels and
 721 attitudes in children and adults. *Sports Medicine* 35(2): 89-105.

722 Wallhead TL, Garn AC, and Vidoni C (2012). Sport Education and social goals in physical education:
 723 relationships with enjoyment, relatedness, and leisure-time physical activity. *Physical Education and*
 724 *Sport Pedagogy* 18(4): 427-441.

725 Wang CKJ, and Liu WC (2007) Promoting enjoyment in girls' physical education: The impact of goals,
 726 beliefs, and self-determination. *European Physical Education Review* 13(2): 145-164.

727 Welk GJ (1999) The youth physical activity promotion model: A conceptual bridge between theory and
 728 practice. *Quest* 51: 5-23.

729 Wilson PM, and Rodgers WH (2004) The relationship between perceived autonomy support, exercise
 730 regulations and behavioural intentions in women. *Psychology of Sport and Exercise* 5: 229-242.

731 Xiang P, McBride R, Guan J, et al. (2003) Children's motivation in Elementary Physical Education: An
 732 expectancy-value model of achievement choice. *Research Quarterly for Exercise and Sport* 74(1): 25-
 733 35.

734 Yli-Piipari S, Jaakkola T, Liukkonen J, et al. (2013) The effect of physical education students' beliefs
 735 and values on their physical activity: A growth mixture modelling approach. *International Journal of*
 736 *Sport and Exercise Psychology* 11(1): 70-86.