



Original research

Physical self-confidence levels of adolescents: Scale reliability and validity



Bronagh McGrane, SarahJane Belton, Danielle Powell, Catherine B. Woods, Johann Issartel*

School of Health and Human Performance, Dublin City University, Ireland

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ABSTRACT

Objectives: To establish reliability, content validity and concurrent validity of the physical self-confidence scale among adolescents. Demonstrate the use of this scale to assess the physical self-confidence of adolescents across genders at performing specific fundamental movement skills (FMS).

Design: Three hundred and seventy six adolescents were involved in this study. A 15 item scale was developed to assess physical self-confidence.

Methods: The scale was developed based on 15 specific FMS. Experts in the field reviewed the scale to ensure content validity. The reliability of the scale was assessed on a sub-sample of 67 participants who answered the scale 7-days apart. Concurrent validity was assessed on the sub-sample using the Physical Self-Perception Profile (PSPP) as a comparative tool. 376 adolescents completed the physical self-confidence scale (mean age = 13.78, SD = ±1.21, males n = 193) to assess gender differences, and also their levels of physical self-confidence across all skills.

Results: An Intra Class Correlation indicated excellent test retest reliability for the scale with an overall $r = 0.92$. Content validity and concurrent validity were also good, with the scale achieving a correlation coefficient of 0.72 with the PSPP. Males possess significantly higher physical self-confidence than females across all items.

Conclusions: This scale is the first reliable and valid tool which specifically measures physical self-confidence in performing FMS among adolescents. The results highlight gender differences in physical self-confidence and emphasise the importance of measuring this at skill level as differences were task specific. This scale will facilitate future research examining the relationship between self-confidence, FMS proficiency and physical activity participation.

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1. Introduction

Fundamental movement skills (FMS) are goal-directed movement patterns which consist of the performance of locomotor, object control and balance skills.¹ FMS allow children, in daily activities, to move from one location to another and/or to respond appropriately to a variety of conditions. They are seen as the building blocks for more advanced physical activity and sport specific skills.¹ Due to their use in every-day life, a high level of FMS proficiency among children and adolescents is considered as a key contributor of future participation in sports and physical activities.²

Children between the ages of 6 to 12 years with advanced FMS spend more time engaged in physical activity behaviours in comparison with children with low levels of FMS proficiency.³ To better understand the acquisition of FMS alongside children and adolescents' levels of physical activity, it is crucial to consider mediators, such as confidence, that may account for the motor development of adolescents.⁴

Children do not solely acquire FMS as a result of maturation and free play; these skills must also be taught.⁵ However, differences in learning environments and duration of practice can affect FMS levels, resulting in children not being at the required proficiency level of FMS in order to advance to sport specific skills.⁶ FMS are a key feature of primary school physical education (PE) programmes⁷ yet, high numbers of children are leaving primary school lacking in these basic physical skills.⁸ Children and early adolescents then enter a new PE environment with new peers where this lack of proficiency may translate into a lack of confidence in performing

* Corresponding author.

E-mail addresses: bronagh.mcgrane2@mail.dcu.ie (B. McGrane), sarahjane.belton@dcu.ie (S. Belton), danielle.powell4@mail.dcu.ie (D. Powell), catherine.woods@dcu.ie (C.B. Woods), johann.issartel@dcu.ie (J. Issartel).

specific skills.⁹ Additionally, at this age the emphasis in sports clubs and extra-curricular activities is progressing onto sport skill development and competition. Therefore, it is of no surprise if youth shy away from participating in sport and physical activity due to the fear of demonstrating a lack of FMS proficiency.¹⁰ This lack of confidence may lead to withdrawal from participating in physical activity (sports or free play) creating a vicious circle that will consequently result in the reduction of the necessary practice of these FMS.¹¹ This lack of confidence is likely to increase as children progress and enter a new school environment at 11–12 years of age.

According to McAuley and Gill,¹² self-confidence is a necessity for achieving success in a sporting performance. They also state that this confidence may be skill and situation specific. For example, during a basketball game a player may feel highly confident passing the ball but may exhibit low-confidence dribbling the ball up the court. Bandura¹³ refers to this type of specific confidence as self-efficacy and proposes that it provokes behavioural change. Self-efficacy expectations influence persistence, thoughts, stimulation, and behaviour as positive self-perceptions lead to positive experiences.¹³ It is also suggested that general physical self-efficacy is associated with the performance of basic tasks such as FMS.¹⁴ However, according to McAuley and Gill,¹² the influence physical self-efficacy has on the performance of complex physical activities is uncertain. They state that it would be plausible to suggest that physical self-efficacy affects a more task-specific self-efficacy which consequently, influences how well one expects to perform (i.e. perceived motor competence), which ultimately may affect performance.¹²

It is important to assess both FMS proficiency and psychological variables such as physical self-confidence to ensure an optimal learning environment and to promote success for all levels.¹⁵ There are various instruments which assess self-efficacy and perceived motor competency on a broader scale for example the Physical Self Perception Profile (PSPP). The PSPP is divided into four sub-domains of self-perception: sports competence, attractive body, physical strength and physical condition which all include questions about confidence.^{16,17} The PSPP was used by Barnett et al.¹⁸ in a study to assess adolescents perceived sports competence, however (i) the PSPP is not skill specific and (ii) does not measure confidence as a specific and stand-alone construct.¹⁹ As Barnett et al.¹⁹ suggest, a limitation of current research is the lack of an instrument to assess perceived motor competence specific to FMS among youth. This led to the development of a skill specific pictorial scale¹⁹ used to assess the perceived motor competence of children based on the skills of the Test of Gross Motor Development-2nd Edition (TGMD-2).²⁰ Barnett et al.¹⁹ developed their scale for use with children and therefore a pictorial scale was appropriate, however for adolescents a scale such as a Likert scale may be more suitable.¹⁰ A gap still remains as there is no instrument for adolescents measuring physical self-confidence in relation to specific skills. Such a scale would provide information on an important correlate of physical activity at a stage where behavioural change occurs and participation begins to decline rapidly.²¹ It is important that the physical self-confidence levels of this age group are assessed across males and females as there may be gender differences which perhaps account for the decline in physical activity levels during adolescence particularly among females.^{17–19} Building and encouraging confidence plays an important role in maintaining participation levels.²² By assessing this age group's physical self-confidence it will therefore highlight those who require support and specific attention. This study aims to assess the content validity, concurrent validity and reliability of a physical self-confidence scale among adolescents. It will also investigate physical self-confidence levels and explore any differences in scores between genders.

2. Methods

Three hundred and seventy six adolescents (males $n=193$, females $n=183$) with a mean age of 13.78 years old ($SD=\pm 1.21$) completed the physical self-confidence scale. Participants were recruited from second year classes throughout 21 schools in the Leinster region in Ireland. Ethical approval was granted by Dublin City University Research Ethics Committee. Parental consent and participant assent were obtained prior to administration. Scales were completed in school, with each school given the option of using an online version (through survey monkey) or pen and paper to answer the questions. The ratio of participant:researcher was 10:1. Prior to completion of the scale the researcher introduced the purpose of the study and encouraged participants to answer the questions honestly.

The physical self-confidence scale, developed by a team of experts in the area of FMS assessment, uses 15 questions in which participants rate their perceived confidence at performing 15 specific skills. Twelve of these questions were derived from the skills assessed in the TGMD-2 (run, leap, gallop, slide, horizontal jump, hop, catch, throw, roll, kick, strike and stationary dribble).²⁰ The remaining 3 questions were based on 3 additional skills (skip, balance and vertical jump) from the TGMD²³ and Victorian skills tests²⁴ as these were deemed central to the Irish sporting culture.^{8,25} The participants were asked to rate their confidence at performing each skill on a Likert scale of 1–10, “1” being not confident at all and “10” being very confident. The scale development was based on a physical activity self-efficacy scale that had then been adapted by Nigg and Courneya²⁶ to assess adolescent perceived confidence in general physical activity. These instruments gave the stem and grading structure to the physical self-confidence scale, however neither of these instruments were skill specific, which is a novel aspect that the physical self-confidence scale accounts for. Barnett, Ridgers, Zask et al.¹⁹ have previously created a skill specific pictorial scale for children (age = 5–8 years) based on the description of each skill in the TGMD-2.²⁰ It was decided to use questions instead of pictures when developing the physical self-confidence scale as it was more age appropriate and efficient for adolescents.¹⁰ Prior to administration, both scale and protocol had been reviewed by 8 experts in the field to ensure clarity and aptness for each question. When ensuring content validity, it was decided to alter the question on the “slide” skill to calling it the “slide (side shuffle)” as experts felt that it could be misinterpreted. All other questions contained the original wording in order to match the TGMD-2. For example: “How confident on a scale of 1–10 are you at the following skill: Catch a tennis ball with two hands? Run in a straight line? Kick a stationary ball that is placed in front of you? Hop 3 times on each foot? Jump as far as you can?”

Test-retest reliability was assessed using an intraclass correlation on a (convenience) sub-sample of 67 participants (males $n=36$, and females $n=31$). This sub-sample completed the scale on two occasions 7 days apart under the same setting and using the same protocol. The intraclass correlation was conducted for each individual skill item in the scale. The skills were then categorised into locomotor, object control, balance and the overall physical self-confidence total score. An intraclass correlation was completed using each of these categories.

To assess concurrent validity a Pearson product-moment correlation coefficient was calculated between the physical self-confidence scale and the PSPP as this is deemed an appropriate tool for use with this age group and included various questions on participants' confidence.^{16,18}

A Mann Whitney *U* test was conducted using data from 376 participants to assess any differences in physical self-confidence levels across genders in overall physical self-confidence scores and then

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