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ABSTRACT

Fundamental movement skill (FMS) competence is low in adolescent girls. An assessment tool for teachers is needed to monitor FMS in this demographic. The present study explored whether the Canadian agility and movement skill assessment (CAMSA) is feasible for use by physical education (PE) teachers of Australian Year 7 girls in a school setting. Surveys, focus group interviews and direct observation of 18 specialist PE teachers investigated teachers’ perceptions of this tool. Results indicated that the CAMSA was usable in a real-world school setting and was considered a promising means to assess FMS in Year 7 girls. However, future iterations may require minor logistical alterations and further training for teachers on how to utilize the assessment data to enhance teaching practice. These considerations could be used to improve future design, application and training of the CAMSA in school-based PE.

Keywords: Australian, feasibility, fundamental movement skills, teaching
Fundamental movement skills (FMS) are typically classified into object control skills (e.g., catching and throwing), locomotor skills (e.g., running and jumping), and stability skills (e.g., balancing and twisting) (Gallahue, Ozmun, & Goodway, 2012; Ulrich, 2000). Developing FMS may have important health implications for young people, as there is a positive association between FMS competence and physical activity, and an inverse relationship between FMS proficiency and weight status (Lubans, Morgan, Cliff, Barnett, & Okely, 2010). Quality instruction and feedback are significant factors in the development of these skills (Martin, Rudisill, & Hastie, 2009). Therefore, the ability to accurately and reliably assess FMS is essential, to allow teachers to identify the FMS learning needs of students, and subsequently develop, and deliver more meaningful and effective FMS learning experiences to their students (Longmuir, Boyer, Lloyd, Borghese, Knight…Tremblay, 2015).

Elementary (primary) school physical education (PE) programs are designed to help students develop FMS (Martin, Rudisill, & Hastie, 2009). Indeed, a recent systematic review (Morgan et al., 2013) showed FMS could be improved in PE when taught by specialist PE teachers or highly trained classroom teachers. However, research suggests that the quality of elementary school PE is often poor (Morgan & Hansen, 2007). There are several well documented institutional and teacher-related barriers that adversely impact on the effectiveness of elementary school PE programs (Morgan & Hansen, 2008), and the quality of assessment within the programs (Lander et al., 2015; Morgan & Hansen, 2007), resulting in many children falling well below the recommended FMS benchmarks of their age and year level (Hardy, Barnett, Espinel, & Okely, 2013).

Ideally, students should have demonstrated mastery of all FMS by Year 4 (Hardy et al., 2013); however, in 2010 the prevalence of Australian Year 6 students with skill mastery was less
than 50% for the sprint run, vertical jump, kick, and overarm throw (Hardy et al., 2010). Of particular concern is the low level of object control proficiency among girls (Barnett et al., 2010). Consequently, many Australian students, especially girls, transition into junior high (secondary) school under-skilled in FMS (Barnett et al., 2010; Hardy et al., 2013). Despite the low levels of FMS in junior high school girls, recent research indicates that teachers of junior high girls do not have a structured way to assess or teach FMS (Lander et al., 2015). Therefore, skill deficits in girls are likely to remain unidentified in junior high school PE programs (Lander et al., 2015), and opportunity to improve actual competence may be limited (Ehl, Roberton, & Longendorfer, 2005; Lander et al., 2015).

Assessment is an integral facet of improving FMS proficiency. Indeed, assessment is a critical component of effective teaching, and thus is an important enabler of student learning (Black & Williams, 2010 Fisette & Franck, 2012). Effective teaching in PE hinges on obtaining accurate information on student skill levels (Hands, 2002). To enhance the effectiveness of teaching, and thus improve learning, assessment ‘for’ learning is recommended. Assessment ‘for’ learning is regular, systematic, and comprehensively integrated into the teaching process. Furthermore, assessment ‘for’ learning is ‘authentic’, that is, applicable to real-life situations (Hay & Penney, 2009; Kirk & O’Flaherty, 2004; Mintah, 2003; Wiggins, 1998). It is assessment ‘for’ learning, that has the potential to promote and advance learning, rather than to simply judge achievement at one point in time (Assessment Reform Group, 2002; Black, Harrison, Lee, Marshall, & William, 2003; Glasson, 2008; William, 2011).

Existing FMS assessment protocols – for example, Bruininks-Oseretsky test of motor proficiency (Bruininks & Bruininks, 2005), Peabody Development Motor Scales (Folio & Fawell, 2000), or the Test of Gross Motor Development (Ulrich, 2000) – are intensive to
administer and analyse, both in time and resources (Wiart & Darrah, 2001), making them difficult to implement within in a typical PE class, and by a PE teacher. Many existing assessments have complex criteria, which are hard to interpret unless extensive training is provided: they require students to be tested one at a time, and in isolation (i.e., one teacher or assessor per child); the scoring protocols require students to perform the one skill several times (sometimes up to five); and can take 20–60 minutes to administer per child (Wiart & Darrah, 2001; Watkinson, Causgrove Dunn, Steadward, Wheeler, & Watkinson, 2003). Furthermore, existing tests are often limited in their authenticity, as they focus on isolated skill performance. These static testing environments do not adequately assess combined and complex movement, nor reflect the open, dynamic and complex physical activity environments typical of childhood play, physical activity and sport (Longmuir et al., 2015; Watkinson et al., 2003).

To address the current limitations of existing FMS assessment, the Canadian agility and movement skill assessment (CAMSA) was developed. The CAMSA was designed to measure movement skill, and was part of a larger study of children’s physical literacy – the Canadian Assessment of Physical Literacy (CAPL) (Lloyd, Colley, & Tremblay, 2010; Tremblay & Lloyd, 2010; HALO, 2014. The administration and assessment protocol for this assessment has been explained in detail elsewhere (https://www.capl-ecsfp.ca/). However, in brief, the course requires students to run 20 meters while completing seven movement skill tasks (i.e., two-foot jump, side step, catch, overhand throw, skip, one-foot hop, kick) (Figure 1). It was designed to reflect ‘real world’ abilities required for sport and physical activity (Longmuir et al., 2015), such as transitioning from one skill to the next, e.g., catching then throwing while on the move. Performances are evaluated using completion time, which is then converted to a point score (range 1 to 14). In addition, the quality of each skill (two foot jump, side step, catch, overhand
throw, skip, one foot hop, kick) is scored as either performed (score of 1) or not observed (score of 0) across 14 reference criteria (range 0 to 14). The total score is calculated as the sum of the skill and the time scores (maximum score of 28 points) (Longmuir et al., 2015). The test is suitable for the FMS assessment of large groups of children in a relatively short time frame, as the test requires limited equipment and space, and only takes between 1.5 and 2 minutes to assess per child (Longmuir et al., 2015).

The feasibility, validity, objectivity, and reliability of the CAMSA have been demonstrated for Canadian children 6–14 years of age, and discussed in detail elsewhere (Longmuir et al., 2015). In brief, face validity was established through a Delphi expert review process. Convergent validity was evaluated by age and sex associations with obstacle course assessment performance. Inter-rater and intra-rater objectivity evidence was excellent for completion time and substantial for skill score, and similarly, test–retest reliability was excellent for completion time and substantial for skill score (Longmuir et al., 2015). However, these assessments were conducted in a Canadian research setting, administered by highly trained researchers (all with degrees in kinesiology and qualified in motor skill assessment) who had received three additional hours of training specific to this protocol.

Therefore, the aim of this study was to explore whether the CAMSA is a feasible FMS assessment instrument for use by teachers of Year 7 girls, in an Australian school-based PE context. Year 7 girls were the focus of this study because there is no FMS assessment currently available for this age group, and many girls transition into high school significantly under-skilled for the sports-based secondary PE curriculum (Barnett et al., 2010; Hardy et al., 2013). In addition, the greatest decline in physical activity is evidenced in girls between the ages of 13 and 18 (Australian Bureau of Statistics, 2013). Furthermore, Australian secondary school PE must be
taught by a specialist (i.e., certified) PE teacher (Rink, Hall, & Webster, 2008), whereas Australian elementary school PE can be taught by non-specialist teachers.

METHODS

This feasibility study was conducted to determine whether the CAMSA is a practicable measure of FMS for use by PE teachers of Year 7 girls, in a school setting and thus appropriate for further testing, specifically, efficacy testing. The usability of the CAMSA was evaluated in this study by examining teachers’ feedback and reflections. Bowen et al. (2009) identified eight areas to address in a feasibility study: demand, acceptability, implementation, practicality, adaption, integration, expansion, and efficacy. The eighth concept, efficacy testing, was not included in the present study, as it was considered outside the scope of this preliminary feasibility research, and will be a focus of future research efforts. In the current study, teachers’ perceptions of the seven areas were investigated via teacher surveys, focus group discussions, and observations (Tables 3, 4 and 5). Participant responses were analyzed in relation to the suggested outcomes of interest, as suggested by Bowen et al. (2009) (Table 2), to determine whether the instrument could be a feasible FMS assessment tool for Australian Year 7 PE programs for girls, and appropriate for further research.

Participants

Nineteen specialist (i.e., certified) PE teachers of Year 7 girls were initially recruited. Eighteen of the 19 participants completed all three surveys (one teacher opted out of the study due to perceived work overload); therefore, 18 teachers, and their respective Year 7 girls PE class (approximately 405 Year 7 girls, age range 11–13), participated in the study (Table 1). Previously, a qualitative descriptive study was conducted to investigate barriers and facilitators of FMS assessment as perceived by Year 7 PE teachers (Lander et al., in press). A purposeful
sample (Sandelowski, 1995) of four teachers from this study, all of whom had indicated interest in further involvement, was selected for the current study as they represented diverse school types, sectors, locations, and had varying attitudes, perceptions and experiences in regard to FMS instruction and assessment. An email invitation was sent out to each teacher, and invitations, plain language statements, and consent forms were forwarded to principals of the four schools. After consent was received, a snowball sampling strategy (Streeton, Cooke, & Campbell, 2004) was implemented within each school, whereby an email was sent to all Year 7 PE teachers at each school inviting them to participate in the study. The research was approved by Human Ethics (HEAG) in December 2014, and the Department of Education and Training (DET), Victoria, in January 2015.

**Procedure**

Teacher training was provided by the researcher prior to Term 1, 2015. The teacher training included a two hour face-to-face seminar, written resources, an interactive workshop, and ongoing support. The seminar content included the background and importance of teaching and assessing FMS, as well as specific administration and evaluation protocols of the CAMSA, as specified in the CAPL training manual (https://www.capl-ecsfp.ca/). The written resources provided instructions on how to set up, administer, and evaluate the CAMSA, including a template for scoring and evaluating student performance, and also provided teachers with links to both the CAPL training manual (https://www.capl-ecsfp.ca/) and video demonstrations of the CAMSA (https://www.capl-ecsfp.ca/capl-training-videos). The interactive practical workshop comprised a step by step demonstration of the setup, administration and evaluation protocol, and teachers had the opportunity to practice the CAMSA several times, receiving feedback and guidance from the researcher. Teachers were also offered ongoing support in the form of
telephone consultation, email contact, or on-site visitation by the researchers (the level of support requested by the teachers was recorded and taken into consideration when analyzing the ‘practicality’ focus area).

Administration of the CAMSA was then carried out by the teachers to all Year 7 girls in week 1 of Term 1, 2015. They evaluated the assessment results from the CAMSA using the protocol specified in the training manual. They were encouraged to use the CAMSA as often as they felt appropriate throughout Term 1 (8 weeks in length) to monitor progress, modify and plan program content and teaching approaches, and use the data to evaluate the success of their teaching and student progress.

**Data collection**

Evaluation of the CAMSA was achieved via teacher surveys, focus group interviews with teachers, and direct observation of the administration of the assessment tool. Figure 2 describes the timing of the evaluation tools in relation to implementation. Teachers were surveyed three times. Survey 1 was conducted before the initial training session, and sought baseline data on teachers’ perceptions and experiences of teaching and assessing FMS to Year 7 girls, and also about the perceived need of an instrument such as the CAMSA (Table 3). Survey 2 was conducted after the two-hour training session, and investigated the teachers’ views and intentions regarding whether the tool could and would be implemented in their current PE practice (Table 4). Survey 3 was conducted after the teachers had administered the tool, either in the last week of Term 1 or in the first week of Term 2, to evaluate the teachers’ experiences using the CAMSA in their Year 7 PE program when teaching girls (Table 5).

Survey 2 and Survey 3 were designed to determine the feasibility of the CAMSA in a PE setting as perceived by the teachers, and the questioning revolved around the seven areas of
feasibility outlined earlier. Survey responses were all based on a 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree. In addition, teachers were encouraged to keep a log of when, where and how they used the assessment tool and/or data derived from the assessment tool throughout the term. These logs were then used as reference points for the teachers when they participated in the focus group discussions. The post-trial focus groups discussion, using semi-structured discussion prompts, were used as an additional method of evaluation. Four focus groups (one focus group per school), with all teachers (n=18), were conducted to discuss the teacher logs and expand on aspects of the focus areas in more depth. In addition, the researcher observed and recorded one teacher per school as they implemented and evaluated the CAMSA with their Year 7 girls PE class. The focus area for the direct observation was ‘implementation’. Specifically, teachers were observed to determine how effectively they were able to integrate the assessment tool itself, and the data gleaned from the assessment data into the teaching process in their Year 7 girls PE class.

Figure 2: Timing of the evaluation tools in relation to implementation
Data analyses

Descriptive analysis was used to investigate the teachers’ perceptions of the feasibility of the CAMSA course in their Year 7 girls’ PE classes, as reported in the surveys. The survey responses and observation notes were collated, tabulated, and categorized to align with the seven feasibility components (demand, acceptability, implementation, practicality, adaption, integration, and expansion). For simplicity of analysis, the survey responses that were originally based on a 5-point agreement scale were condensed into three categories (1 = disagree, 2 = neither disagree nor agree, 3 = agree). In addition, focus group discussion data (four focus groups, 18 teachers) were transcribed verbatim by the first author. The interview data were used for process evaluation, with a particular focus on the implementation of the CAMSA relative to program plan, barriers and problems encountered, and the teachers’ actual use or engagement with the CAMSA throughout Term 1, 2015 (Baranowski, 2000; Patton, 1982).

RESULTS

Survey 1 (pre-training: Table 3) and Survey 2 (post-training, pre-trial: Table 4) responses, reporting on teachers’ pre-trial perceptions, were coupled with the teachers’ actual experiences (Survey 3; post-trial: Table 5), and are presented below by focus area. Direct observations and quotes from interview responses are integrated and provided as examples of certain points.

Demand

Survey 1 (pre-training) revealed that all participants (n=18) agreed that teaching FMS was important in the Year 7 PE curriculum, and that assessment of FMS was also important (Table 3). However, the majority of the teachers (14/18) reported barriers to effective FMS
assessment in the PE context, including a lack of objective and effective assessment tools available, and therefore accurate and meaningful FMS assessment was often neglected.

_We don’t have up-to-date or accurate assessment protocols to identify what is the most important area to focus on: i.e., catching or throwing or kicking._ (Female teacher, independent girls’ schools)

All teachers indicated there was a significant need for an assessment tool that could be easily administered to measure student FMS competency.

**Acceptability**

Survey 2 (pre-trial) results indicated that all teachers (n=18) anticipated that the CAMSA would be a suitable assessment tool (for both students and teachers) for measuring FMS proficiency in Year 7 PE students (Table 4). All teachers were satisfied with the training session provided for the administration and evaluation of the CAMSA. All participants intended to use the tool in their Year 7 program, and perceived it to be an appropriate method of FMS assessment for their PE class. All teachers predicted that the tool would fit into their organizational culture and structure without major disruption, and also speculated that it would have positive effects on teaching and learning. After using the CAMSA, teachers affirmed that the format was well accepted by students.

_The girls adapted to the [CAMSA] course quickly, they were engaged and seemed to really enjoy themselves; it made administering the assessment fun and easy._ (Male teacher, independent girls’ school).

Teachers unanimously suggested that the CAMSA was a vast improvement on existing FMS assessments they had attempted in Year 7 PE. In particular teachers appreciated the clear criteria and agreed that it was simple and easy to observe and assess.
This is so much easier than other FMS manuals that schools are using where the criteria is so complex that you get lost in the performance. (Female teacher, independent girls’ school)

**Implementation**

All teachers anticipated that they would be able to successfully administer the test (Survey 2; pre-trial: Table 4). Teachers’ actual experiences (Survey 3; post-trial: Table 5) were consistent with initial predictions and revealed that all teachers could, and did, set up and administer the tool successfully in their PE class. Teachers expressed that their efficiency, speed and quality of implementation improved with practice and familiarity.

*At first the test was a bit daunting as it was new to me – but it was so easy to administer and I gained confidence very quickly.* (Female teacher, independent girls’ school).

The duration of the initial administration of the tool ranged from 40 minutes to 75 minutes per class. All teachers implemented the tool at least once per class (the recommended minimum) in Term 1, 2015, within the first two weeks. All teachers reported they had scheduled repeat episodes of the course later in the year, with the intention to monitor progress and reassess student needs. However, only one school (with six participating teachers) conducted the test twice in Term 1, once in the first week (diagnostic) and once in the last (summative), to determine progress throughout the term.

*It was great to get a baseline measure of the students’ skills, use the criteria to provide feedback to the students and then re-test them to show them and me what progress, if any, had been made.* (Male teacher, government co-education school)

All teachers predicted they would be able to evaluate the test results successfully (Survey 2; pre-trial: Table 4). Again the teachers’ initial expectations of successful analysis largely
aligned with their actual experience of the process, with the majority of teachers (15/18; Survey 3; post-trial: Table 5) stating that they were able to analyze and evaluate the data obtained from the assessment tool successfully. The three teachers who did not feel they could successfully analyze the data requested assistance via email.

_The actual scoring system was quite simple to follow and pretty easy to undertake._ (Male teacher, government co-education school)

In addition, the majority of the teachers (17/18) reported that their students (~405 students) were actively engaged in the assessment, participated in the CAMSA successfully and enjoyed the process, regardless of their level of skill (Survey 3; post-trial: Table 5).

_Every one of my students completed the assessment with some level of success. Even if they dropped a catch, there were several other skills included that the student could move on to, so that one dropped catch wasn’t the focus._ (Female teacher, co-educational government school)

Survey 2 (pre-trial) results indicated that teachers unanimously expected they would be able to successfully use the data gleaned from the assessment tool to guide subsequent teaching (Table 4). However, Survey 3 (post-trial) data revealed that not all teachers (13 of the 18) reported using the data generated from the CAMSA to plan, prepare or guide subsequent teaching (Table 5). In addition, from the interview data, it appeared that the majority of the teachers were referring only to preparing lesson content (i.e., specific skills to focus on), rather than improving or modifying teaching approaches. Indeed, from interview accounts it appeared that many teachers were not confident in selecting and/or integrating the optimal pedagogy into their lesson to better engage their students.
It’s great that we have the information, but knowing what to do with it, and how to change our teaching is the challenge. (Male teacher, independent girls’ school)

Furthermore, direct observation by the researcher identified that, while all schools were implementing the tool, the extent and efficiency of implementation varied. In the least effective implementation, only one CAMSA was set up, so assessment ‘of’ learning, rather than assessment ‘for’ learning, was the single and central purpose. In this scenario there were extended waiting periods for students, lack of physical activity and engagement, and a greater focus on single episodes of assessment. The most successful implementation occurred when several other activities, stations or tasks were set up in conjunction with the CAMSA. This approach better engaged students, decreased student waiting time, decreased the emphasis on high stakes assessment, and better integrated assessment as part of learning.

**Practicality**

Survey 2 (pre-trial) indicated that all teachers thought they would be able to administer and evaluate the CAMSA independently. Although many teachers (12/18; Table 4) reported that no additional support was required, six teachers suggested they would have liked or they did need additional support throughout the assessment and evaluation process. When this was discussed in focus group interviews it became apparent that the support required largely regarded pedagogy, or how to integrate assessment into subsequent FMS teaching practice, rather than the administration, implementation or evaluation of the tool. Although ongoing support was offered to all teachers throughout the term, three out of the four schools did not request any additional assistance. The one school that required assistance asked for clarification via email about the scoring protocol, personal assistance with the setup of the course, and feedback after their first attempt of the test to ensure they were following the protocol accurately.
Despite the general success in administration of the tool within the PE context, some teachers reported some negative factors affecting implementation (although teachers often provided intuitive and insightful solutions to overcome these barriers). Firstly, the necessity of two teachers to perform the two assessor roles, as prescribed by the protocol, was often unrealistic within the ‘real-life’ school PE setting. Therefore, some teachers compromised by setting up a video camera in the position of assessor 1, which allowed for thorough evaluation of student performance via the recorded footage. Another perceived difficulty was the burden on the one teacher to complete all the assessor roles outlined in the protocol (timing student, instructing via the script, and feeding the balls), while still keeping the rest of the class engaged. As a solution, some teachers used injured or out-of-uniform students as timers, while other teachers brought in older students as assessors.

Another perceived difficulty was the time burden of the assessment; firstly, in regard to the physical setup of the test itself, requiring a number of cones, hoops and precise measurements. Teachers felt this was time-consuming as they often had to set it up after the class was underway, which reduced their teaching time. However, there were several suggestions to resolve this, including colored tape markings on the floor to replace the cones and hoops. Another suggestion was a thin floor mat with all required markings painted on it that could be quickly rolled out and folded away afterward. However, overall, teachers stated that, in regard to practicality, the positive effects of the course far outweighed the negatives.

The tool was so easy to administer, it was realistic and practical, perfect for PE. Girls were very engaged and very competitive to beat their previous score. (Male teacher, government co-educational school)

Adaptation
Survey 3 (post-trial) data suggested that the CAMSA was perceived to be a major improvement on previous forms of FMS assessment teachers had been using, which were often subjective and therefore not reliable. All teachers reported that the clear and valid criteria coupled with the format of the course allowed them to identify student skill levels quickly and accurately.

This [CAMSA] course made it very easy to identify students at either end of the proficiency spectrum. The high performers and the low level performers really stood out, and therefore you could identify these students immediately and begin to tailor programs for these students. (Female teacher, independent girls’ school)

The participants concurred that the dynamic nature of the assessment led to a higher level of fun and engagement. Students enjoyed taking part and were very keen to better their scores. They also agreed that the format of the CAMSA course allowed several skills to be observed at one time and therefore had more reach and relevance across the different units that were scheduled across the Year 7 curriculum.

I loved the variety of skills that were included in the test, because they are skills that are included in nearly every unit we cover in Year 7 PE, from athletics to many of the ball sports. The test would be relevant for all the units. (Female teacher, co-educational government school)

The teachers also reported that the skills course format, rather than tests that assess single skills in isolation, was hugely valuable. Participants suggested that it provided a truer picture of the students’ skills, as they had to transition from one skill to the next, which was more like sport and physical activity. Teachers also indicated that it was the transitions that largely differentiated low and high performers.
The better skilled kids would move from one skill to the next quickly and smoothly, therefore their time would be faster – it was the opposite for the less skilled kids. (Female teacher, independent girls’ school)

Furthermore, several teachers valued the combined method of assessment, integrating both qualitative and quantitative measures.

Integration

Survey 2 (pre-trial) results indicated that all but one teacher predicted the CAMSA would fit into their current school PE curriculum and structure (Table 4). Survey 3 (post-trial) data supported this, with the majority of the teachers (14/18; Table 5) agreeing that the CAMSA was successfully integrated into their school PE infrastructure (i.e., curriculum, lesson allotment, scope, sequence, and structure). For example, one school had an athletics unit in Term 1, but were able to utilize and specify the test and test data for the purpose of athletics. Conversely, four of the teachers reported that, as their curriculum was already established for Term 1, it was difficult to integrate the assessment and the assessment data.

The majority of teachers (15/18; Table 5) reported that the tool was not a disruption to their class, curriculum or student learning objectives, and teachers inferred that once familiar with the protocol, the CAMSA was a valuable inclusion not only as an assessment tool but also as a guide for teaching and planning.

The content of the [CAMSA] course gave me a framework for any lesson that included skills tested in the course. I knew the teaching points to give, which were clear and simple. ...The kids and I loved using this tool! (Female teacher, independent girls’ school)
Survey 2 (pre-trial) responses indicated that all teachers anticipated students would enjoy and be engaged with the tool, and in reality these perceptions were largely supported, with 17 of the 18 teachers reporting their students were actively engaged and enjoyed the task (Table 5).

Furthermore, interview accounts indicated that the students became familiar with the course very quickly, and displayed a desire to improve their scores.

*It is a fantastic tool that the kids took ownership of and really enjoyed completing.* (Male teacher, co-educational government school)

One school planned to modify their reporting system to align it with that of the CAMSA, so that not only teachers and students were aware of student progress, but the parents were also informed about student proficiency and progress.

*We are redeveloping our reporting system in PE to coincide with the standards provided in the CAMSA – we are using pre-test and post-test results to report on improvement over the semester.* (Female teacher, independent girls’ school)

**Expansion**

All teachers, in both Survey 2 (pre-trial) and Survey 3 (post-trial), agreed the CAMSA could be expanded to provide an ongoing measure of FMS proficiency for Year 7 girls at their school. When asked about modifications for future iterations, some interesting suggestions were made. A couple of teachers indicated that the prescribed distance in the overhand throw and kick component in the course was too short, and reduced the need for a forceful execution of those two skills.

*Make the throw and kick distance longer [suggested 10 m] so it makes them perform the skills properly with more power.* (Male teacher, independent girls’ school)

One participant indicted that the small target also restricted the execution of the throw.
I didn’t like the use of the target for the throw as student were too focused on getting it in the target, they didn’t focus on technique and ended up lobbing it rather than (overarm) throwing. (Female teacher, independent girls’ school)

Indeed, throughout the interviews, a few teachers expressed concern that students were so focused on performing the course as quickly as possible that it often jeopardized the quality of their performance.

I don’t really see the value in attaching time, as the students get so attached to how fast they can do it that their technique goes out the window, this is especially true in the side step and skip, where they end up just running. (Male teacher, independent girls’ school)

Survey 2 (pre-trial) results indicated that all teachers perceived that the tool would enhance their FMS teaching (Table 4). Survey 3 (post-trial) results showed this was true for 14 of the 18 teachers (Table 5). Interview accounts of these four teachers indicated that additional pedagogical education, in conjunction with comprehensive training on the assessment tool, would have greatly benefited their teaching practice.

I see the assessment tool as just that … an assessment tool. I don’t see it as enhancing my teaching, as assessment alone doesn’t change much – you need to know how to teach. (Male teacher, independent girls’ school)

The majority of the teachers indicated they thought the tool would enhance the FMS proficiency of their students. Indeed, in Survey 3 (post-trial), 11 out of the 18 teachers reported that the CAMSA course actually enhanced the FMS proficiency of the students (Table 5). Three out of the four schools did not conduct post-test assessment, so did not have data to compare student progress reliably. However, one school (with six participating teachers) monitored
student progress across Term 1, and believed there were improved results in overall skill scores for many students.

Teachers unanimously agreed that they felt more confident in their ability to assess the FMS proficiency of Year 7 girls after the training and implementation of the CAMSA. Furthermore, interview accounts indicated that many teachers were interested in, or intended to use the tool in the future, and reported that the benefits to both teacher and student would only continue to increase as their familiarity and confidence expanded.

“There is so much potential with what we can do with this tool. I can see this changing the face of Year 7 PE. If we have students’ skill level data from day one of Year 7, we know what to do and how to do it. Our teaching will have much more impact as we know what we are dealing with.” (Female teacher, independent girls’ school)

DISCUSSION

This study aimed to address two research questions: (1) whether the CAMSA was a feasible FMS assessment instrument for use by teachers of Year 7 girls, in an Australian school-based PE context and (2) whether the CAMSA could be successfully integrated into the teaching process (i.e., used as assessment ‘for’ learning) in the context of a PE class when teaching Year 7 girls. The CAMSA was found to be feasible for use in the real-world context of Year 7 PE classes, as perceived by the teachers. However, some issues were raised by the teachers in regard to integrating the assessment tool into the teaching–learning process.

Teachers universally agreed that there was a significant demand for the tool in the Year 7 girls PE program. Fundamental movement skills are not a key focus in the National Curriculum for Australian junior high (secondary) School PE, nor do they feature prominently in many
junior high PE programs across Australia, perhaps because, theoretically, students should have mastered these skills by age 10 (Ulrich, 2000). However, in reality, many students transition into secondary school falling well below the recommended FMS benchmarks of their age and year level (Hardy, Barnett, Espinel, & Okely, 2013), indicating that FMS education is a required and necessary component of the Year 7 curriculum. In the present study, the participating teachers indicated that the CAMSA provided an effective means to accurately identify where students are in their learning, and therefore it was viewed as not only a needed tool, but also as an acceptable and valuable inclusion to the Year 7 PE curriculum.

The majority of teachers managed to successfully implement and evaluate the tool, sometimes several times in one term, and most were able to do so independently. Encouragingly, all teachers administered the test within the first couple of weeks of term, allowing for early and accurate identification of learner needs. This is congruent with research on effective assessment, whereby conducting assessment early in the teaching process provides valuable information to best meet the needs of individual students (Black & William, 2010; Harrison, 2013).

Although this study differed from the Canadian feasibility study (Longmuir et al., 2015), in regard to protocol, context, assessors and participants, the positive results regarding the format and the structure of the tool were shared. The teachers valued the practical and dynamic nature of the tool, which they believed provided a truer picture of girls’ FMS proficiency. The teachers also agreed that the number and variety of skills measured in one test provided scope for transferability of the findings across a diverse range of units in the Year 7 PE curriculum, supporting the notion that incorporating movement skills within a skills course format enables a more accurate and complete profile of whether the child can combine more complex and dynamic skills that enable them to succeed in being physically active with peers (Longmuir et
al., 2015). Overall, teachers agreed that the CAMSA was a significant improvement on assessment strategies they had implemented in the past.

Although the CAMSA course was largely viewed by teachers as a feasible measure of FMS proficiency in girls, several issues were raised regarding successful integration of the test into the teaching process, predominantly about how to best use results to support student learning (i.e., assessment ‘for’ learning). Indeed, to more comprehensively integrate this assessment tool into effective teaching practice, the teachers may have benefited from additional training in pedagogy or teaching strategies that translate the data gleaned from the CAMSA course into practical teaching methods. Indeed, research strongly suggests to promote and advance student learning, assessment must be comprehensively integrated into effective pedagogy (Black & William, 2010).

Another concern raised by several teachers was time restraints, which is often stated as a barrier to effective PE (Morgan & Hansen, 2008). The protocol for the CAMSA requires two assessors. This was considered unrealistic by many of the teachers, as they did not have the luxury of two teachers available. Although participants found inventive alternatives, such as iPad usage or the inclusion of student assessors, they still perceived this as a barrier to feasibility in a PE context. In addition, they felt that conducting all the specified assessor roles limited their capacity to keep all students active and on task. Indeed, having only one CAMSA set up, and being completely engrossed in this formal assessment, as the protocol demands, detracts from the ability of the teacher to be present for the other students in the class. As well as being difficult for teachers, this scenario emphasizes ‘high stakes’ assessment, which can demotivate students (Ntoumanis, 2001).

**Future recommendation**
Issues that surfaced here may be used to improve future iterations of this type of assessment tool for the education context. For the CAMSA to facilitate assessment ‘for’ learning, or ‘authentic’ assessment, and to be better integrated into the teaching process, several recommended amendments to the protocol are suggested. Firstly, class setup needs to be prepared in advance, for instance, several activities or CAMSA courses set up rather than one single assessment. Formative assessment should also be encouraged, that is, using the results to plan and deliver subsequent FMS lessons. The assessment procedure should be shared with the students, for instance, via peer assessment, or self-assessment using video footage. Multiple assessment episodes should be integrated into the teaching process, using assessment regularly to monitor, promote and improve learning, to de-emphasize summative or high stakes assessment. These recommendations not only provide direction or focus for teacher training or professional development programs, but indeed suggest there is a need for more comprehensive teacher training program, when testing the tool further.

A limitation to this study was the isolated testing of the CAMSA, which reflects only one component (physical competence) of the CAPL. The CAPL is capable of assessing multiple aspects of physical literacy, including: daily behavior, motivation and confidence, knowledge and understanding, and physical competence. Indeed, physical literacy moves beyond measuring fitness, motor skill or motivation in isolation. Therefore, further research is recommended to investigate the feasibility of the CAPL in its entirety within an Australian school-based PE context. Furthermore, this study focused on the teaching and assessing of girls FMS, therefore the findings are limited to Year 7 girls only. Future research is recommended in co-education settings, where the findings can apply to both males and females. In addition, further research is needed to ascertain the students’ reflections and feedback of the CAMSA, and importantly to
CONCLUSION

For an intervention to be worthy of testing for efficacy, it must address the relevant questions within feasibility (Bowen et al., 2009). The results of this study provide evidence that the CAMSA is feasible FMS assessment instrument, for use by PE teachers of Australian Year 7 girls, in a PE context, among a sample of secondary school teachers. Teachers thought there was a significant demand for the tool, perceived the approach to be appropriate, and expressed that use of the assessment tool enhanced their confidence in conducting FMS assessment. However, our findings suggest that, for the tool to be integrated as an ‘authentic’ assessment of FMS in the Year 7 PE environment, the provision of comprehensive training in pedagogical practices promoting the integration of the assessment into effective teaching practice would further enhance the successful utilization of the tool. It is reasonable to assume that a more comprehensive teacher training package coupled with the integration of the CAMSA into Year 7 curriculums may lead to better student outcomes in movement skill competence than pre-existing FMS assessment practices.
REFERENCES


