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Research Paper

"Coach's Eye" as Talent Selection Technique in Iranian School Sport: Pilot Study on Checklist Instrument for Youth Handball

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Abstract

Talent programs are aimed to detect talented athletes that are predictive of future career success. New foremost feasible and practical approaches in schools and youth sport with evidence-based procedures, in order to increase the probability accurate anticipation, is needed. Through this approach, the coach is considered as a reference for talent identification and selection. In the literature, the term "coach's eye" is used as a metaphor for coach decision-making in selecting talents and for the description of the process of subjectively evaluating athletic performance. In the present study, we tried to develop and implement a form of checklist for coach to select talented youth handball in Iranian schools competitions. This process was based on the coach's intuition and subjective experience and had the potential to provide a more holistic profile of the athlete. To define the role of the coaches in talent selection and to avoid reducing reliability, objectivity, subjective biases, we developed a form used by coaches. The forms contained a checklist of items that the coach must consider while observing athlete during playing, and assign a score from 1 to 10 based on criteria. CVR and CVI were examined through employing expert panel. Final items that acquired sufficient CVR and CVI were listed and other items were removed. From 15 items extracted throughout interviews with experts, 11 items reached CVR and CVI values higher than critical value (0.56 in n=12) and were introduced as valid items for identifying and selecting handball talents. These items could be used in schools and youth handball competitions.

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Introduction

Sports organizations invest enormous resources in seeking for athletes who have the potential to reach top level of sport performance and to excel to excellence. The talent identification (TID) programs are planned for identifying the talented players who have superior demonstration in capabilities that are prescient of future profession achievement (Reilly et al., 2000; Williams et al., 2020). Routinely, some players are selected and recruited for further development programs that provide the appropriate learning opportunities, facilities, equipment, and staff and quality coaching to fulfill potential (Burgess & Naughton, 2010; Lidor et al., 2009). Traditionally, TID programs are relied upon the subjective and intuitive evaluation of players' potential by scouts and coaches, who base their criteria predominantly on personal insight, knowledge, and experience (Christensen, 2009; Vaeyens et al., 2008). However, over the past several decades, there has been an increasing interest in complementing these subjective assessments with evidence-based talent identification procedures, in order to increase the probability of careful selecting and accurate forecasting the future career of players. According to literature and scientific text, talent research has been known as the integration of multidimensional and comprehensive models that detail prerequisites and predictors of successful future performance (Bergkamp et al., 2019; Reilly et al., 2000), as well as a plethora of studies that have aimed to estimate the empirical relationships between these predictors and performance criteria in different sports (Williams et al., 2020).

Talent identification as the process which allows them to 'see' the skills, qualities, attributes or traits of an athlete (and relevant combinations) that indicate (or contraindicate) future high-level performance (Roberts, 2021). That is, the number of senior players who sign professional contract that were selected in the youth teams is a measure of how successful a selection strategy is (Kalén et al., 2021).

The continued interest in Talent Identification (TID) & Talent Development (TDE) research reflects the persistently low predictive value of applied and theoretical TID models which have been developed so far (Till & Baker, 2020). Along with TID programs, Talent selection (TS) has become an integral part of many athlete development systems (Williams & Reilly, 2000). Talent is assumed to be multidimensional as coaches report several criteria that considered essential for TID and TS.

Various techniques and methods have been used in TID and TS, including measuring abilities, anthropometric traits and physical capabilities via laboratory and field tests (Baker et al., 2017b; Baker & Schorer, 2010; Cobley et al., 2020; Reilly et al., 2000)

Still, a major issue in the field of sport sciences is to apply best-practice talent identification methods, that is, methods that allow for valid predictions of players' future performance (Bergkamp et al., 2019).

In recent decades, there has been an increasing interest in complementing subjective assessments with evidence-based TID procedures to increase the probability of selecting successful athletes. A plethora of studies have been conducted to estimate the empirical relationships between these predictors and performance criteria in different sports. Sport scientists have been trying to determine variables and athletic profiles to explain and forecast athletes' future success, ultimately aiming to identify athletes with the greatest potential for success based on these variables (Johnston et al., 2018). There are coaches who are decisive in screening and passing talents through the gates.

However, in practice, coaches typically decide who will be selected into supportive talent development (TDE) programs based on their own observations and impressions, making them a key "gatekeeper" to further developmental opportunities (Sieghartsleitner et al., 2019).

The ability of top-level coaches to be able to identify "true" talent is a highly sought-after quality that ensures clubs or national teams not to lose time, money, and other resources by investing in the "wrong" players. Consequently, whichever method was adopted, the coach and his decisions play a key role in talent selection as, more recently, researchers have tried to uncover the value of coaches' intuitive decisions.

Research in this area indicates that coaches' selections are mainly based on overall impressions using measurements of distinct variables and game observations, rather than norms and/or standards of performance (Den Hartigh et al., 2018). A method that has a noteworthy feasibility advantage and may be practicable to implementation in schools sport competitions and other set of competition as well as the clubs that take into account youth sport and have the process of talent promotion and athlete's development in their youth programs, can be fruitful (Koz et al., 2012).

Through this approach, the coach is considered as a reference for TID and TS. In the literature, the term "coach's eye" is used as a metaphor for coach decision-making in selecting talents. The term "coach's eye" was used to describe the process by which a coach subjectively evaluates athletic performance (Christensen, 2009; Day, 2011; Lath et al., 2021; Roberts et al., 2020). There are great coaches who intuitively select talents even though there is no precise definition for their respected indexes and parameters for selection (Lath et al., 2021). In accordance with literature review, four main attributes were derived from the studies. Coach's eye appears to be 1) intuitive, 2) experience-based, 3) subjective, and 4) holistic (Lath et al., 2021). 1) Intuitive: suggesting coaches may not necessarily or consistently apply conscious reasoning during their selection and decision process (Johansson & Fahlén, 2017; Lath et al., 2021). 2) Experience-based: Christensen (2009) noted the crucial role of experience in describing talent identification and selection processes. Relevant experience is comprised of the sport they are coaching in, the coach's years of practice at various levels of coaching, their own experience as an athlete, and especially their experience as selectors in talent identification and selection processes (Roberts et al., 2019, 2021). Furthermore, Christensen (2009) acknowledged the use of "seeing something" as a metaphor for knowledge and recognition of patterns through visual experience (Christensen, 2009). 3) Subjective: Depending on the various individual experiences presented above, a coach has subjective ideas and conceptualizations of what an athlete needs to have and show to be selected (Johansson & Fahlén, 2017; Lath et al., 2021). Therefore, "coach's eye" reflects the coach's internal process of evaluating, resulting in a decision to select or deselect the athlete. This process is based on the coach's intuition and subjective experience and has the potential to provide a more holistic profile of the athlete (Jokuschies et al., 2017; Lath et al., 2021). 4) Holistic: While Christensen (2009) included only the recognition of "patterns of movement" (i.e., soccer skills) as part of the visual experience in combination with "personal qualities", Jokuschies et al. (2017) expanded this discussion to multiple factors (i.e., personality, cognitive-perceptual skills, technique, motor abilities, development, social environment, or physical constitution), expecting coaches to subjectively vary on the importance or weight assigned to specific characteristics (Jokuschies et al., 2017). The coach's

eye appears to be able to evaluate or assess an athlete as a whole (Christensen, 2009; Jokuschies et al., 2017; Lath et al., 2021).

As mentioned earlier, TS mainly relies on the subjective judgment of scouts and coaches. Coaches play a significant role in the identification of talent, both in the laboratory and on the field. However, while coaches play a major role during talent identification in practical sport settings, there is limited research evidence exploring the processes which underpin this (Schorer et al., 2017). According to the existing theoretical bases, and even though the coach's eye is more acknowledged in the literature, it seems that its most important problem is the lack of objectivity and person-centered result. There are different number of methods and tools for identifying and selecting youth talent in Handball. Therefore, major drawbacks and lack in these tools included methodological invalidity, low anticipation power, and disagreement of their results with coaches' opinions. It has been generally accepted that the coach is major determinant in inclusion of athletes, their success trajectory, and providing improvement conditions of identified talents. Therefore, nevertheless, it is necessary to develop an integrated checklist or form via it and through the coach's eye so that a more accurate assessment of the selected talent can be made. The existence of such a form/checklist (subject to sufficient validity and reliability) can increase the coordination between the evaluations and reduce the individuality in the choices. Talent is assumed to be multidimensional (Baker et al., 2017a; Matthys et al., 2011; Reilly et al., 2000) and coaches report several criteria they consider important for TID and TS (Chiwaridzo et al., 2019; Jokuschies et al., 2017; Larkin et al., 2020). One of the problems of talent evaluation forms in Iran is that, typical forms contain a large amount of information and too many indicators, which make the process of its completing difficult and reduce reliability.

On the other hand, evaluation and measurement of talent during so-called TID's tests is usually associated with some biases. In talent seeking, it is more important to measure the underlying potential and abilities, while in talent selection (the purpose of this study), the assessment of acquired skills and capabilities is considered, so it is better to be evaluated in conditions where there is normal stress to occur. Therefore, the present study intends to develop a form that scout can evaluate players during student competitions and select the best talents. All the way, it is difficult to characterize the coach's eye using clearly

defined principles for the talent identification and selection process unless defining a unique, valid and reliable instrument to use is provided.

In Iran, due to the vastness of the country and the climate and geographical spreading, the possibility of sending specific scout to all regions is costly and challenging. However, by means of an efficient, valid, reliable and objective instrument, it can be carried out on a wider level through physical education teachers who have a qualified coaching certificate from the National Handball Federation. In the present study, we aimed to review the studies in this area and probe the results of surveys conducted to implement this method in Iranian schools. To define the role of the coach in talent selection in the country and to avoid reducing the inter-rater reliability, objectivity, subjective biases, we developed a form for TS by the coach -Physical Education teachers- in handball. The purpose of this study was to explore the content validity of the "coach's eye" instrument checklist/form for measuring talented player during the schools sport competitions.

Methods

The current study is part of the *Talent Selection* project in Iran School Sport Federation. This study is descriptive and exploratory in which experts' opinions are used to develop a form containing a checklist of talent selection indicators in handball at the level of student sports in Iranian school competitions. According to the situation of school sports around the country, the high profiles cases will be selected based on the existing forms and will enter the talent development cycle for the next programs that may be in collaboration with sports clubs.

Expert panel

A panel consisting of experts and professionals in the field of talent in handball was gathered. The criteria for inclusion in the panel included having appreciable experience and history in handball, having a background of activity in the TID field in handball with the official approval of the national federation on the mentioned characteristics, and having a previous coaching experience in youth sport and acquaintance with children and adolescent's sports. All the coaches had completed at least a bachelor's degree and were employed as full-time professional physical education teacher along with a coaching activity in Iran education system in schools. The age range of coaches and experts of panel was from 36 to 54 years.

First, a number of experts were interviewed in a way that, based on the scientific studies and surveys conducted in the field of handball talent identification, certain indicators were identified (Bjørndal et al., 2017; Mohamed et al., 2009;

Nikolaidis & Ingebrigtsen, 2013) and the experts were asked individually to suggest their indicators. The three criteria were considered including handball coaching approved by the handball federation of the Islamic Republic of Iran with the introduction and approval of the federation, experience of handball activity as a coach and experience of at least ten years active in the field of handball at elementary ages, as well as teaching handball in Iranian schools.

After going through the process of determining the specified indicators, 12 of these people were invited to join as expert's panel. The specific criteria for this section was having MSc degree in sports science, in addition to the previously mentioned characteristics. This panel met in face-to-face meetings and reviewed the forms containing talent selection indicators.

Form

The talent selection forms included indicators based on which scout could select talents in school sports competitions. The target indicators were first identified based on previous studies and the background of the topic of talent search in sports. Then, items was reduced to 15 indexes by Delphi method. First, a group was determined to specify the final indicators of the list and by consensus, the final indicators were determined to quantify content validity. Eventually, with the opinion of the panel of experts and using the content validity ratio (CVR) and the content validity index (CVI), the final indicators were determined (Lawshe, 1975). The finalized form evaluated interested items about player performance with defined criteria in 1-to-10-point scores.

Interview

Semi-structured interviews with international coaches explored this 'instinct' during TID and revealed that coaches require experience, time and knowledge of context in order to identify talent. During interview, the coach was asked to identify the most important factors in recognizing a handball talent. Then, by agreement, these items were reduced to less than 20 items. Although in some cases, the initial suggestion of the trainers was less than 20 items. Then, the total results of the interviews were aggregated and the items were merged according to their operational definition and reduced to a specific number using the Delphi method (Christensen, 2009). Considering that the goal was to introduce factors that can be evaluated during a handball match, the number of items led to more general and brief items, and finally, based on the summaries made in the interviews and expert opinions, 15 items were selected for review. Content validity was included in the opinions of the expert panel to determine content validity.

Content Validity

Content validity can be defined as the level which the instrument measures the attribute of interest. Content validation is the procedure to provide this promise that an instrument (questionnaire, checklist, form, or scale) measures the content that it is expected to measure. Lawshe's method, initially proposed in a seminal study (Lawshe, 1975), has been widely used to quantify content validity in various fields of measurement including health care, education, exercise sciences, psychology, and market research (Ayre & Scally, 2014). It involves a panel of "experts" rating items into one of three categories: "essential," "useful, but not essential," or "not necessary." Items deemed "essential" by a critical number of panel members were then included within the final instrument, and the items failing to achieve this critical level were excluded. Critical value level of CVR varied according to the number of experts who were present in panel. Lawshe (1975) suggested that based on "established psychophysical principles," a level of 50% agreement gives some assurance of content validity. In the current study, we used one method that involved empirical techniques to calculate the content validity index (CVI) and the content validity ratio (CVR). The CVR (Content Validity Ratio) proposed by Lawshe (1975) is a linear transformation of a proportional level of agreement on how many "experts" within a panel rate an item "essential" as calculated in the following formula:

$$CVR = \frac{n_e - (N/2)}{N/2}$$

Furthermore, after examining the CVR, the CVI was also examined. Based on the available research reports, the acceptance range for each item depends on the number and opinion of the expert panel members. CVI is the most widely reported approach for content validity in instrument development and can be computed using each Item-CVI. Its values range from 0 to 1 where CVI is less than 0.79, the item is relevant, , the item needs revisions if it is between 0.70 and 0.79, and if the value is under 0.70, the item is discarded (Lawshe, 1975; Wynd et al., 2003).

Results

The results of the interviews to recognize the indexes and characteristics necessary to measure youth handball player during the game intending to select talents were summarized in 15 items. Based on handball coaches' views, and with regards to simplicity, clearance, and feasibility, items selected for observational talent selection and content validity were determined using Content Validity Index (CVI) and content validity ratio (CVR). The result of

analyzing list for each item was descripted in table 1. The present checklist form was planned to use for selecting handball talents aged 13 -16 years old who play in youth sport competitions.

Table 1. CVR and CVI report for items of checklist according to panel of experts

Item (Quality)	CVR	CVI
Passing	1.00	1.00
Dribbling	0.83	0.92
Receiving	0.83	0.83
Shooting	0.50	0.75
Defense	0.67	0.67
Attack	0.50	0.67
Agility	0.83	0.83
Speed	0.83	0.92
Strength	0.50	0.58
Arm span	1.00	1.00
Game intelligence	0.83	1.00
Physical appropriateness to handball/position	0.67	0.83
Jump	0.50	0.58
Reaction	1.00	1.00
Flexibility	0.83	0.83

*Critical value for CVR are 0.56 based on size of expert panel (n=12)

According to Lawshe's table for expert panel size, with 12 experts, the minimum CVR required to accept an item was 0.56. Therefore, looking at the data obtained from the analysis, items including: Passing, Dribbling, Receiving, Agility, speed, Arm Span, Game Intelligence, Physical Appropriateness to Handball/Position for field players and goalkeepers and Reaction and Flexibility for goalkeepers had an acceptable CVR more 0.56 and remained in checklist form as a variable to selecting talent. Shooting, Attack, Strength and Jump acquired less than critical CVR and had to be removed from the list. All items which had CVR higher than critical value had CVI 0.8 and more, except defense which were 0.67 and was not enough to be included. Other items such as Shooting, Attack, Strength and Jump were not fit with the value of CVI criteria (0.8) according to Lawshe's CVR formula. Eventually, the following items were selected with the critical value of CVR and a minimum of 0.8 CVI, established in talent selection form: Arm span, Game Intelligence, Dribble, Pass, Receiving (Catching), Speed, Agility, Flexibility, Reaction Time, and Physical Appropriateness to Handball.

Discussion

The purpose of present study was to provide insight into developing an instrument to selecting youth talented player based on experience, intuitive and mindset of coach who try to assess player just by observing their performance. In schools sport competitions, it needs to evaluate athlete according some attributes in accordance with some criteria. The qualified coaches have adequate knowledge and information about the characteristics that select talent. In this regard, the study contributes to practice-related and experience-based knowledge and to the understanding of talent identification in a complex sport such as handball. A challenge in the forms/checklist or other tools introduced in the previous studies in Persian language for the Iranian society is the large amount of information needed to be gathered in one form, so that completing the form becomes boring for scout or coach. Such circumstances make it difficult to conduct a detailed accurate examination.

Similar to the form and lists suggested in the previous studies, the indicators selected by the current expert panel can also be classified into several categories, anthropometric measures, physical fitness components, technical skill, and psycho-social attributes. In the current list, we had just one anthropometric measure (the arm span) which seems to be an ordinary choice and is important due to the high activity of the upper extremity in handball. Anthropometric measures are more genetic-based and have very low change during talent development (Jacob et al., 2018; Zaccagni et al., 2019). The technical parameters cover major part of the present list. Considering the age of the target population who have just passed through puberty and also because of the nature of the conditions in which they are evaluated- the competition-, it seems that this choice is rational (Matthys et al., 2011; Mohamed et al., 2009). The technical index has been introduced as the most important index for selecting players (Vrljic & Mallett, 2008). The indicators related to physical fitness and physiological capacities also had a significant CVR in the current list. Speed and agility remained as two components of physical fitness in the final list of talent selection indicators, which play an productive role in the successful performance of handball (Bjørndal et al., 2017; Matthys et al., 2011; Mohamed et al., 2009). There was just one factor as a representative of psychological indicators in the present list. Perhaps it can be suggested that the role of psychological factors cannot be limited to a one index. Many psychological factors are involved in sports performance, especially competition, but the veracious solution is to focus

on a general index. In fact, it should be all-inclusive enough to contain most of the indicators.

Most studies have suggested that it is not thought-out to rely on only one group of indicators in the talent search and talent selection process. Rather, there are a huge amount of researches since the beginning of the century which have explicitly emphasized the multivariate nature of TID and TS (Matthys et al., 2011; Reilly et al., 2000; Sieghartsleitner et al., 2019; Williams et al., 2020). Therefore, in the present proposed form, there are all types of different categories in the chosen characteristics.

On the other hand, the evaluations performed in talent identification in testing conditions lead to bias, and all conditions may not be the same for all assessors and scouts. The ultimate destination of the selected talent is to participate in the competition. Therefore, in this developed form, an attempt was made to measure the capabilities during the match execution and playing in competition set. Under the circumstances, the athlete faces many challenges such as pressure conditions, variety of game situations, and competing with real opponents. Although the chances of the ability to emerge may not be the same for all athletes, but, those who create superiority for themselves are those who have enough capacity and ability to be selected as the superior talent. The form is designed for middle education periods (the first and second high schools in Iran education system) when most likely the athlete has passed the PHV. Selection at this age in reliance on specified indicators can be more permanent (Barati et al., 2013). Although talent selection in lower ages should be in reference to potential rather than skills, and for this, it is necessary to take action for this issue at a younger age. However, due to the lack of systematic programs in Iran, if this issue be addressed, with regard to no sufficient facilities for testing, it is better to do this during competitions and with simple objective checklist. It is obvious that participating in competitions means that a person has passed the skill training and gaining experience. Therefore, it has an established status in terms of technical skill. In addition, at one age and later, attention should be paid to skill indicators for talent identification and talent selection. Therefore, the current form should not be considered as a form for measuring future potential or talent, but rather as a form for measuring current capabilities and skills. Studies have shown that even when asked to select athletes based on potential for future performance, coachestend to select based on existing capabilities (Roberts et al., 2021). This bias in paying attention to the internal criteria is one of the reasons why it is better to create a solution to select talent based on the developed ability.

This article indicates that the coaches' eye is the lens through which coaches watch youth athlete's capabilities, by using their expertise, knowledge and experience to interpret the athlete's potential, and the time spent with the athlete and the context of their identification to determine whom they will be selected into their team. It seems that coaches recognize talent with reference to what they can improve; thus, coaches must be involved in the identifying and selecting talented athletes. These results indicate that National Sporting Organizations, sport clubs, and National School Sport Federation should ensure that coaches are provided with the necessary knowledge, education, time and supervision to ensure that athlete pathway to excellence is optimized.

The current weighted form of checklist gives scout the opportunity to select the top talented youth athletes based on objective criteria during student sport competitions. The upcoming schools competitions in which students compete in handball matches, utilizing this form, -which is a common product of the school Sports Federation and the National Handball Federation of Iran-, there is an opportunity to identify top talents and participate them in the process of athlete development. Developing talent and building backup athletes for national teams is a possible, but ideal, destination point is what the use of efficient talent selection tools can provid.

Conclusion

The results emphasize that the underlying mechanisms of the coach's eye are still unknown and links to theoretical models are missing. The current form is developed to recognize youth handball player and is useful and valid in gathering the opinions of experts in determining important indicators for selecting handball talent. However, pointing to our study limitations, it is necessary in this field to check its reliability during different times and among different ratters. In general, talent selection by a coach, whether with this form or with any other tool, should be based on scientific knowledgeboth in sports science and in statistical science. This study provides a new understanding of the concept of coaches' eye and of how the coaches' eye works during TID. These findings have implications for the ongoing practice and research of talent identification in handball and other ball team sports. Moreover, this study contains recommendations for both coaches and national sport organizations to improve the accuracy, confidence, validity and reliability of the coaches' eye when forecasting talent. We believe this model provides a useful starting point for investigating the decision process and the underlying mechanisms of the coach's eye. Contrary to many coaching decisions in which the consequence of a judgment is known so fast, it can take years for a coach to confirm the accuracy of their predictions and resulting selections, hence confirming or refuting their

selections. However, like all other predictive models in any field, there is a possibility of predicting failure, and, we close the discussion with a sentence that; "Uncertainty is an essential and non-negotiable part of a forecast" (Roberts, 2021). In summary, the combination of the subjective coaches' eye with scientific data may buffer the mutual weaknesses of these two dissimilar approaches. Future research should focus on optimizing the output of promising multidimensional and mixed models. The knowledge of detailed values relating to specific dimensions within these models and the implementation of enhanced non-linear statistics may enable further improvements in the field of talent selection.

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