EUJAPA

Original Article

A multidisciplinary investigation into talent identification process in blind soccer: A Delphi and analytical hierarchy process study

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Received: 7th February 2023; Accepted: 29th January 2025; Published: 9th June 2026

Abstract: Talent identification programs will pave the way for participation of people with impairments in sports and are important for achieving success in the Paralympic Games. The aim of this study was to identify and rank the important factors for talent identification in 5-a-side soccer. The expert panel participated in a three-phase e-Delphi study to reach consensus on important factors for talent identification in 5-a-side soccer. Experts included 5-a-side soccer coaches and talent scouts, 5-a-side soccer players, and experts in the field of sports for individuals with visual impairments. Consensus was reached on 56 factors (categorized into six criteria), which were then subjected to an analytical hierarchy process. Tactical skills (0.254) ranked first, which composed of factors such as spatial orientation and verbal communication. Secondary to tactical skills, technical skills (0.207), including skills such as dribbling and ball control, were identified as factors of great importance. Physiological and physical fitness factors (0.189) ranked third, composed of factors such as sound reaction time and agility. This was followed respectively by anthropometrical factors (0.170), psychosocial factors (0.117), and impairment-related factors (0.063). Therefore, 5-a-side soccer players are required to have various characteristics to be successful in this sport, with tactical/technical skills perceived as the most essential factors.

Keywords: Paralympic sports; 5-a-side football; Visual impairments; Individuals with impairments.

Introduction

The Paralympic Games is a major international multi-sports event held every four years for athletes with impairments. The Paralympic Games have undergone tremendous growth over the past decades and have become the world's second largest multi-sport festival at the present time (Dehghansai & Lemez, 2017). Although the Paralympic Games were initially organized with the purpose of using sports for rehabilitation of individuals with impairments, they became increasingly competitive with the passage of time making the modern-day setting of Paralympic sports more competitive than ever (Houlihan & Chapman, 2016; Sandip & Sampa, 2018). To achieve success in today's competitive Paralympic Sports, a scientific approach needs to be followed. This approach, known as the talent identification and development system, helps each sport's professional clubs and governing bodies focus their training opportunities and funding on individuals with the highest potential for success. With this approach, they stand a much better chance of sporting success by using their limited resources in the most effective way (Johnston et al., 2018; Till & Baker, 2020; Wilson et al., 2021). Talent identification and development are two important steps of any sport program aimed at preparing athletes for competing at an elite level (Saward et al., 2020). Central to talent identification and development systems is an assumption that the concept of "talent" exists and is waiting to be identified and developed in a suitable environment (Baker at al., 2020).Although

talent is an ambiguous concept and its definition is not consensual across different sports (Sarmento et al., 2018), it has generally been defined as the presence of specific factors that correlate to and predict future sports performance (Till & Baker, 2020).

Predicting future sports performance, which is typically based on measuring various factors including physiological and psychological factors, is not an easy task. In team sports, predicting future performance is even more difficult because team sports are tactically complex, rely on actions of all members of the team, and every player has their own predetermined responsibilities during the game (Höner et al., 2021; Wilson et al., 2021). Therefore, it is necessary for researchers and practitioners to determine which factors (talent indicators) are correlated to potential for future success within sport-specific systems to make more accurate decisions regarding athlete identification and selection. Several recent systematic reviews summarising the empirical evidence for factors that may predict sports performance in general (Johnston et al., 2018), and in specific sports such as soccer (Mustafovic et al., 2020; Sarmento et al., 2018), indicate that different factors contribute to performance including anthropometrical, physiological, technical, tactical, and psychological factors. The results of these studies reinforce the call for multidimensional assessments in talent identification and development systems. If measured correctly, these factors may provide policymakers, talent scouts, coaches, and researchers with useful information on talent identification and future sports performance predictions. However, it is necessary to mention that talent identification is sport-specific and even position-specific in some team sports. Thus, there is no fixed set of factors that can predict future performance across different sports and factors should be associated with the specific demands and characteristics of a given sport (Rommers & Rössler, 2019).

Although our understanding of talent in able-bodied sports has recently improved, our knowledge regarding how talent is identified and developed in Paralympic Sports is still very limited due to a scarcity of literature in Paralympic Sports (Dehghansai & Lemez, 2017; Dehghansai et al., 2021; Houlihan & Chapman, 2016). The paucity of research in the field of talent identification and development in Paralympic Sports calls for more research on this topic. Despite some similarities between the talent identification and development process in mainstream sports and Paralympic Sports, there are fundamental differences that increase the complexity of this process in the field of Paralympic Sports. For example, impairment-related factors such as impairment type and classification have an enormous impact on the range of factors that may be considered during the talent identification and development process in Paralympic Sports (Dehghansai & Lemez, 2017; Dehghansai et al., 2021; Houlihan & Chapman, 2016).

One of the most popular sports in the Paralympic Games is 5-a-side soccer. An official Paralympic sport since its debut at the Athens 2004 Games, 5-a-side soccer is a game played by athletes with visual impairments. While this sport is known as blind soccer worldwide, on the official website of the International Paralympic Committee (IPC) it is called 5-a-side soccer, referring to the number of players on each team. There are two versions of soccer for people with visual impairments, including B1 soccer for players who are completely blind and B2/B3 soccer for those players who are partially sighted. In the Paralympic Games, only athletes with visual classification B1 can compete in 5-a-side soccer. Although the rules of this game are based on conventional futsal, some adjustments have been made to make it more suitable for players with visual impairments (Pennell et al., 2022). In addition to the differences in the rules, it has been mentioned that the playing features of the 5-a-side soccer are not the same as other soccer modalities (Puerto et al., 2018). Some significant differences are the technical and tactical actions such as the types of advancements, blocks, or playing systems performed during the 5-a-side soccer matches (Puerto et al., 2018). Furthermore, due to visual impairment and its effects on motor skills and performance, the athletes who participate in 5-a-side soccer differ substantially from those who play conventional soccer or futsal (Campos et al., 2014; Giagazoglou et al., 2011).

Considering all these issues, the primary purpose of this study was to obtain insights from an expert panel into the factors that are related to performance in 5-a-side soccer and are, therefore, essential to be considered for talent identification in this sport. The secondary aim of the study was to determine the level of importance of the selected factors and organise them hierarchically.

Materials and Methods

Firstly, a literature review on talent identification and development in 5-a-side soccer was conducted and the factors related to performance in this sport were explored. To the very best of our knowledge, no holistic study has ever been conducted on talent identification and development in 5-a-side soccer and the current knowledge about this topic is very limited. A common approach to studying incomplete or lesser-known areas of knowledge is to seek the opinion of experts within the field of study. One valid and well-established approach that provides a clear method for gathering the knowledge and experience of experts on the problem at hand is the Delphi technique (Barrett & Heale, 2020). This method is an iterative process that uses a systematic progression of repeated phases of review. The Delphi technique's characteristics such as structured communication while avoiding interpersonal influences, expert anonymity, and its ability to progress into new forms of application offer several advantages over other methods that help facilitate consensus among experts. This technique typically contains multiple interactions with the members of an expert panel who complete two or more phases of surveys until a consensus is reached (Barrett & Heale, 2020). An adapted E-Delphi (Electronic Delphi) method was used in this research to reach a consensus among experts regarding which performance factors in 5-a-side soccer should be considered for talent identification in this Paralympic sport (Kite et al., 2021; Malekzadeh & Hadavi, 2018; Roberts et al., 2019). The consensual factors were then presented in a final survey to a group of experts consisting of 5-a-side soccer coaches and talent scouts who rated the importance of the factors. To do this, an Analytical Hierarchy Process (AHP) was used (Nurjaya et al., 2020). AHP is a strong and helpful multi-criteria decision-making tool that is widely used to quantify the relative priority of a given set of items according to the appropriate value scale (Ishak et al., 2019). AHP, which is based on a set of pairwise comparisons, improves the accuracy of results in contrast to other conventional methods. The AHP questionnaire scale ranges from one to nine, where one indicates that the two elements are equally important and nine indicates that one element is extremely more important than the other (Ishak et al., 2019).

Before participating in this study, each participant was advised of the procedures involved and signed a written informed consent form. The research protocol was approved by the Paralympic committee of Iran and the adapted physical education department at Guilan University, Rasht, Iran. The research ethics certificate was obtained from the research ethics committee of Sport Sciences Research Institute, Tehran, Iran (IR.SSRC.REC.1402.045).

Literature review

During this phase, a comprehensive review of the literature was conducted by the study team. The primary goals of this phase were (1) to see if any study on talent identification and development in 5-a-side soccer has been conducted before, and (2) to explore the factors suggested in articles to be related to performance in 5-a-side soccer. The data extracted from reviewed articles was used to provide an initial draft of relevant factors.

Expert survey using the Delphi method

Participants

In a Delphi study, the selection of expert panel is very important because the results of the study depend entirely on the expert knowledge and opinion (Barrett & Heale, 2020). Therefore, a purposeful sampling of academic experts and practitioners in the related fields was conducted by the steering team (three authors of the article). Three types of academic experts and practitioners were recruited, including: (1) 5-a-side soccer coaches and talent scouts with at least five years of experience; (2) 5-a-side soccer players with at least seven years of playing experience in Iran's national 5-a-side soccer team; (3) experts, researchers, and lecturers in the field of sports for people with visual impairments with at least five years of related experience or three related articles published. Participants were asked to indicate their primary affiliation if they fit into more than one category. After being identified by the steering team, the participants were recruited via their personal mobile numbers, WhatsApp messenger, and their email addresses. Between five and 20 experts is recommended when using expert opinion in applications of the Delphi technique (Barrett & Heale, 2020). However, due to high drop-out rates of experts in multiple-phase Delphi studies and the

subsequent impact on study validity (Barrett & Heale, 2020), a total of 36 individuals (15 coaches and talent scouts [group 1], seven players [group 2], and 14 experts, researchers, and lecturers [group 3]) were contacted for participation in the Delphi process. All participants provided informed consent before participating in the study. They were then sent the first questionnaire which contained an information letter, outlining the specific details related to the study's purposes and procedure.

Delphi study - Phase one

The aim of this phase was to solicit a diversity of opinions regarding all possible factors related to performance in 5-a-side soccer and to generate a list of factors for talent identification in this Paralympic sport. Therefore, in line with similar studies (Kite et al., 2021; Roberts et al., 2019), the first questionnaire consisted of open-ended questions, designed based on the results of our literature review. The questionnaire contained nine questions, asking the participants about the anthropometrical factors, physiological and physical fitness factors, psychosocial factors, tactical and technical skills, and other factors not falling into any of these categories, which in their opinion were important to be considered for talent identification in 5-a-side soccer. The face validity of the questionnaire was established by an expert panel consisting of university researchers and lecturers.

Delphi study - Phase two

Based on the results of the literature review and the panel's responses to the first questionnaire, a list of factors considered to be important factors for talent identification in 5-a-side soccer was created. In phase two, the results of the phase one, the generated list of factors, and an information letter about the aim and procedure of phase two were sent to the participants. The aim of this phase was to reach a consensus among the expert panel on the list of factors. Therefore in this phase, the participants were asked to rate each attribute according to its appropriateness for talent identification in 5-a-side soccer using a five-point Likert scale, with one indicating "not appropriate at all and should be removed from the list" and five indicating "extremely appropriate and should be included by all means". Due to the heterogeneity of the participants, a "no opinion" option was also provided along with the five-point Likert scale. After phase two, the percentage of agreement for each attribute was calculated and the factors that gained at least 70% of the available score from the expert panel were taken as those consensually agreed to be appropriate (Barrett & Heale, 2020). The factors that achieved at least 70% agreement were not included in the next phase (i.e., achieved consensus to be retained) and those that achieved less than 30% agreement were dropped (i.e., achieved consensus to be dropped). The remaining factors were included in the next phase.

Delphi study - Phase three

In phase three, the members of the expert panel were presented with the results of phase two, including the calculated percentage of agreement for each attribute and their own responses, and the third questionnaire. The participants were asked to review the information and re-rate the remaining factors, which still needed to reach consensus among experts, using a five-point Likert scale. At the end of this phase, the final list of factors which received consensus to be retained was created.

All the online questionnaires for the Delphi phases were developed and produced via an online survey provider (https://survey.porsline.ir) and the links to the questionnaires were sent to participants via WhatsApp messenger. Each questionnaire was left open for 20 days, with a four-week interval between the phases. Ten days after sending each questionnaire, the participants were sent a reminder.

Analytical hierarchy process

The final list of factors, developed through the Delphi phases, was then subjected to an AHP. The aim of this phase was to determine the relative priority of each factor in the final list. The AHP questionnaire was prepared by the study team and asked respondents to compare the importance of each factor. The questionnaire, along with a guideline on how to answer and an information letter explaining the purposes of this phase, was distributed among the participants via email (in Microsoft Word format, 11 participants) or in person (paper questionnaire, four Coaches who were present at Iran's national 5-a-side soccer team camp). A deadline of two months was set for participants to send their responses back. The participants were sent reminders 20 and 40 days after sending the questionnaire. The participants in this phase were the same as group one of the Delphi study,

consisting of 15 coaches and talent scouts who had at least five years of experience in 5-a-side soccer. After receiving the responses, the data were analysed using the Expert Choice 11 software. This software calculates the weight of the criteria and sub-criteria factors as well as the inconsistency ratio. Criteria and sub-criteria weighting is a method to compare proposed alternatives quantitatively and the consistency ratio is a metric that indicates the consistency between pairwise comparisons.

Results

Delphi study

Delphi study – Phase one

The final list of factors for talent identification in 5-a-side soccer was the product of a three-phase data collection and analysis process. Of the 36 experts invited to participate in the study, 26 completed the first questionnaire (response rate 72.22 %) and were invited to participate in the subsequent phase (Table 1). The factors mentioned by the expert panel in the Delphi phase one open-ended questionnaire were extracted. These factors were compiled with the initial draft list generated from the literature review. (Table 2). Consisting of 56 factors, the list was subsequently used in the second Delphi phase.

Table 1. The participant's field of expertise in each phase of the Delphi study

	Phase one (*n* = 26)	**Phase two (*n* = 22)**	**Phase three (*n* = 12)**
Group 1	Nine coaches and talent scouts (11.22 years of experience)	Seven coaches and talent scouts (11 years of experience)	Four coaches and talent scouts (12.75 years of experience)
Group 2	Three 5-a-side players	Three 5-a-side players	-
Group 3	14 experts: - PhD researchers = 12 (Sports physiologist = 4; Sports medicine specialist = 2; Adapted physical education specialist = 2; Sports biomechanics specialist = 1; Sports psychologist = 1; Sports sciences specialist = 1; Psychologist = 1) - M.Sc. (Master of science) researchers = 2 (Physical education and sports sciences specialist)	12 experts: - PhD researchers = 10 (Sports physiologist = 3; Sports medicine specialist = 2; Adapted physical education specialist = 2; Sports biomechanics specialist = 1; Sports psychologist = 1; Sports sciences specialist = 1) - M.Sc. researchers = 2 (Physical education and sports sciences specialist)	Eight experts: - PhD researchers = 6 (Sports physiologist = 2; Sports medicine specialist = 2; Adapted physical education specialist = 1; Sports biomechanics specialist = 1) - M.Sc. researchers = 2 (Physical education and sports sciences specialist)

Delphi Study – Phase two

Of the 26 experts who had answered the first questionnaire of the Delphi study, 22 participants completed the second questionnaire (response rate 84.61 %) and were invited to participate in phase three. Considering the highest score on the five-point Likert scale is five and the number of participants in this phase was 22, the total possible score for each attribute was 110. Where a factor achieved a total score of 77 or more (70% agreement or more) this was classed as reaching a consensus to retain the factor. Where a factor achieved a total score of 33 or less (30% agreement or less) this was classed as reaching a consensus to remove the factor. In the cases where one or more participants had chosen the "No opinion" option, their answers were excluded from the analysis and the total score for each of those factors was calculated based on the total number of respondents minus those who had chosen the "No opinion" option. For example, the total score for an attribute was 100 if two respondents had chosen the "No opinion" option in responding to that attribute. According to the results of the analysis, of 56 factors presented in the comprehensive list, 36 factors achieved at least 70% agreement and were put on the final list, and nine factors achieved less than 30% agreement and were eliminated. Then a list of factors which were neither confirmed nor eliminated was made and used in phase three of the Delphi (Table 2).

Table 2. Results of the Delphi study by phase

	Factors	% agreement	Likert Score Mean	Likert Score SD	Phase 1 Consensus	% agreement	Likert Score Mean	Likert Score SD	Consensus to
Anthropometrical factors	Ankle breadth	24.0	1.20	0.40	Drop	……..			……..
	Body fat percentage	83.6	4.18	0.64	Retain	……..			……..
	Body mass index	81.0	4.04	0.48	Retain	……..			……..
	Body type	77.1	3.85	0.63	Retain	……..			……..
	Calf girth	81.0	4.04	0.89	Retain	……..			……..
	Foot arch index	22.9	1.14	0.34	Drop	……..			……..
	Foot length	26.0	1.30	0.45	Drop	……..			……..
	Body height	68.0	3.40	0.58	Phase 3	68.3	3.41	0.49	No change
	Lower extremity length	72.4	3.61	0.65	Retain	……..			……..
	Shoulder width	26.7	1.33	0.47	Drop	……..			……..
	Thigh girth	80.0	4.00	0.83	Retain	……..			……..
	Body mass	80.9	4.04	0.87	Retain	……..			……..
Physiological and physical fitness factors	Aerobic power	95.5	4.77	0.41	Retain	……..			……..
	Agility	91.8	4.59	0.49	Retain	……..			……..
	Anaerobic power	86.4	4.31	0.81	Retain	……..			……..
	Balance	85.0	4.25	0.76	Retain	……..			……..
	Flexibility	80.9	4.04	0.76	Retain	……..			……..
	Muscular endurance	90.4	4.52	0.66	Retain	……..			……..
	Muscular power	94.3	4.71	0.54	Retain	……..			……..
	Muscular strength	92.7	4.63	0.48	Retain	……..			……..
	Neuromuscular coordination	91.8	4.59	0.57	Retain	……..			……..
	Sound reaction time	92.7	4.63	0.56	Retain	……..			……..
	Speed	86.4	4.31	0.63	Retain	……..			……..
Technical skills	Ball control (Stopping the ball)	92.7	4.63	0.64	Retain	……..			……..
	Dribbling skills	97.3	4.86	0.34	Retain	……..			……..
	Passing skills	90.0	4.50	0.58	Retain	……..			……..
	Shooting the stationary ball	55.0	2.75	0.82	Phase 3	65.0	3.25	0.72	No change
	Shooting while running	97.3	4.86	0.34	Retain	……..			……..
Tactical skills	Anticipation skills	73.3	3.66	0.64	Retain	……..			……..
	Spatial orientation	99.1	4.95	0.20	Retain	……..			……..
	Decision making skills	74.3	3.71	0.62	Retain	……..			……..
	Game Intelligence	47.6	2.38	0.78	Phase 3	46.7	2.33	0.62	No change

	Factors	% agreement	Likert Score Mean	SD	Phase 1 Consensus	% agreement	Likert Score Mean	SD	Consensus to
	Verbal communication skills	97.3	4.86	0.34	Retain	……..			……..
Psychosocial factors	Anxiety and Stress controlling	84.5	4.22	0.73	Retain	……..			……..
	Attitude	73.6	3.68	0.97	Retain	……..			……..
	Bravery and risk taking	81.0	4.04	0.57	Retain	……..			……..
	Coachable	64.8	3.23	0.52	Phase 3	66.7	3.33	0.47	No change
	Commitment	59.0	2.95	0.72	Phase 3	50.0	2.50	0.86	No change
	Concentration	88.2	4.40	0.71	Retain	……..			……..
	Creativity	70.5	3.52	0.58	Retain	……..			……..
	Desire	58.1	2.90	0.68	Phase 3	56.7	2.83	0.68	No change
	Disciplined	43.8	2.19	1.00	Phase 3	43.3	2.16	0.68	No change
	Environmental factors	24.8	1.23	0.60	Drop	……..			……..
	Independence	66.7	3.33	0.64	Phase 3	60.0	3.00	0.70	No change
	Motivation	80.9	4.04	0.97	Retain	……..			……..
	Parents Support	29.1	1.45	0.58	Drop	……..			……..
	Peers Support	29.1	1.45	0.58	Drop	……..			……..
	Resilience	72.4	3.61	0.89	Retain	……..			……..
	Responsibility	57.1	2.85	0.70	Phase 3	53.3	2.66	0.62	No change
	Self-confidence	90.9	4.54	0.58	Retain	……..			……..
	Self-determination	53.3	2.66	0.56	Phase 3	48.3	2.41	0.49	No change
	Self-regulation	82.0	4.10	0.70	Retain	……..			……..
	Siblings Support	29.1	1.45	0.58	Drop	……..			……..
Impairment related factors	The cause of visual impairments	26.3	1.31	0.46	Drop	……..			……..
	The onset of visual impairments	78.1	3.90	0.60	Retain	……..			……..
	The severity of visual impairments	27.4	1.36	0.58	Drop	……..			……..

Delphi study – Phase three

Of the 22 experts who had answered the second Delphi questionnaire, only 12 participants (response rate 54.54 %) completed the third questionnaire (Table 1). In this phase, none of the 15 factors achieved 70% of consensus after being re-rated by respondents and were, therefore, not included in the final list (Table 3). After three phases of the Delphi study, the final list of factors was compiled, consisting of 36 factors grouped in six categories (Table 2). The final list of factors was then subject to the AHP.

Analytical hierarchy process

A decision hierarchy was established based on six criteria and their respective sub-criteria using the Expert Choice 11 software (Figure 1).

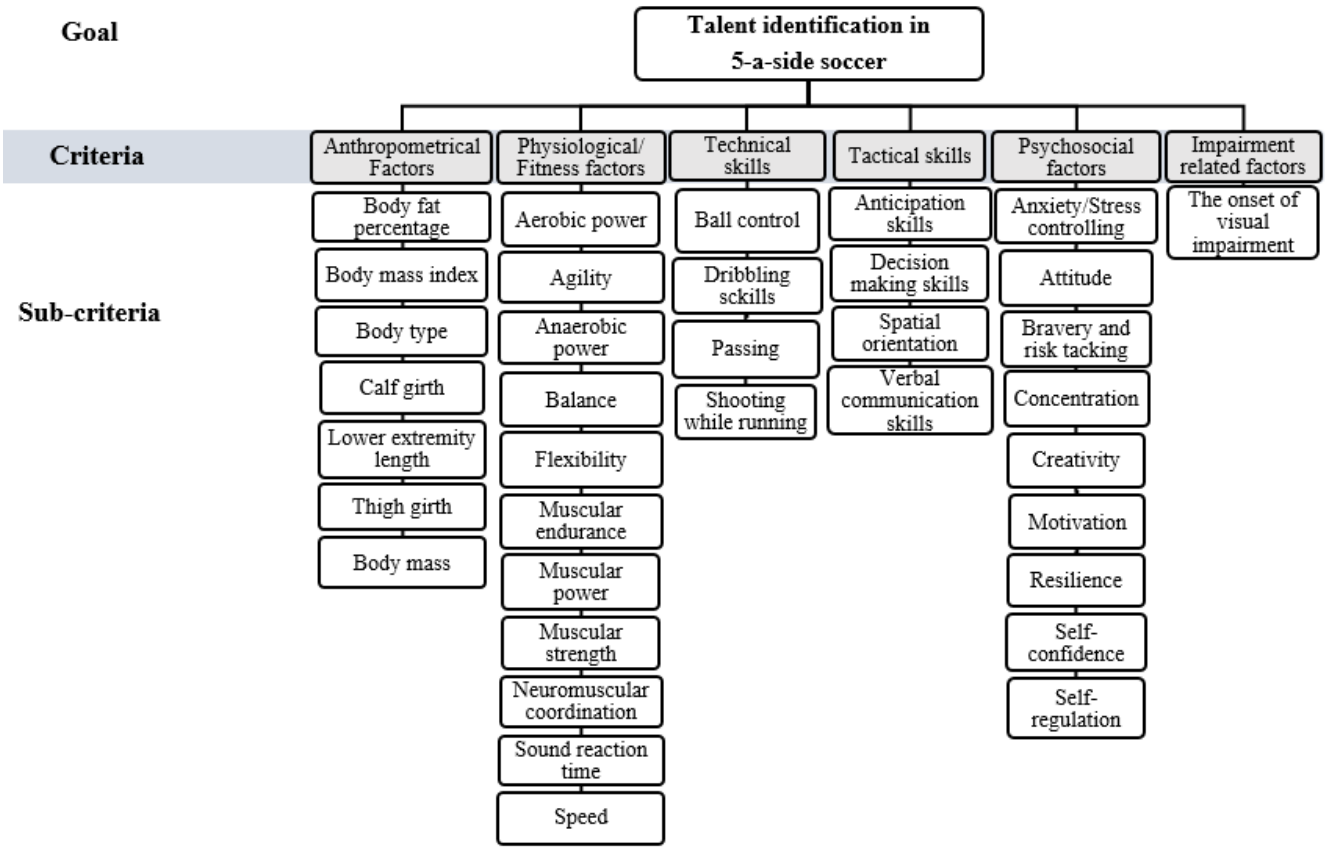

Figure 1. Hierarchy for talent identification in 5-a-side soccer

Of the 15 experts who were requested to answer the AHP questionnaire, only seven experts completed and returned it (response rate 46.7 %). The completed questionnaires were analysed using the Expert Choice 11 software. Tactical skills (0.254) ranked first in order of importance, and impairment-related factors (0.063) the least (Figure 2). The inconsistency was .01.

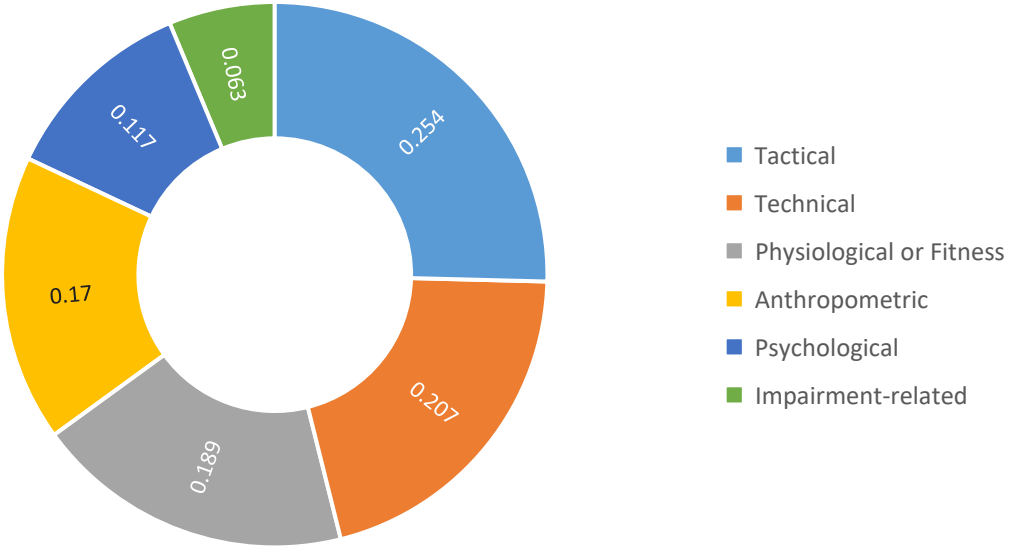

Figure 2. The weights of factors in criteria for talent identification in 5-a-side soccer.

Figure 3 shows that spatial orientation (0.422) was found to be the most important attribute within the category of tactical skills. The least were decision making skills (0.174) and anticipation skills (0.100). The inconsistency was .08.

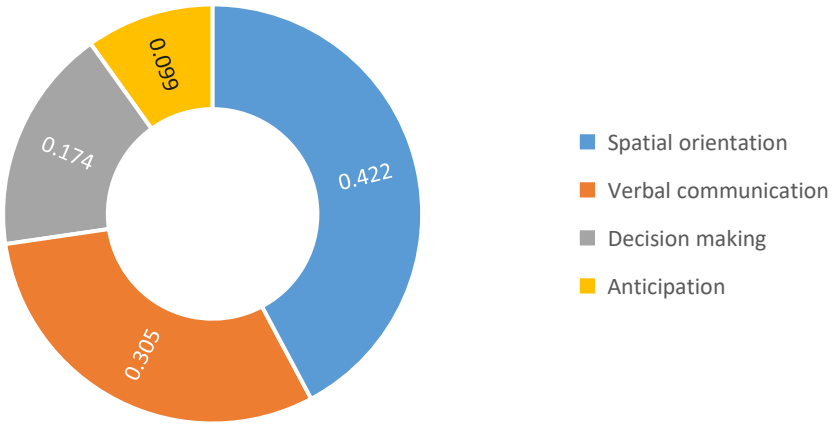

Figure 3. The weights of sub-criteria in tactical skills.

The most important sub-criterion in the category of technical skills was dribbling skills (0.399). With a dramatic difference in weight, ball control (0.214) was of secondary importance (Figure 4). The inconsistency was .03.

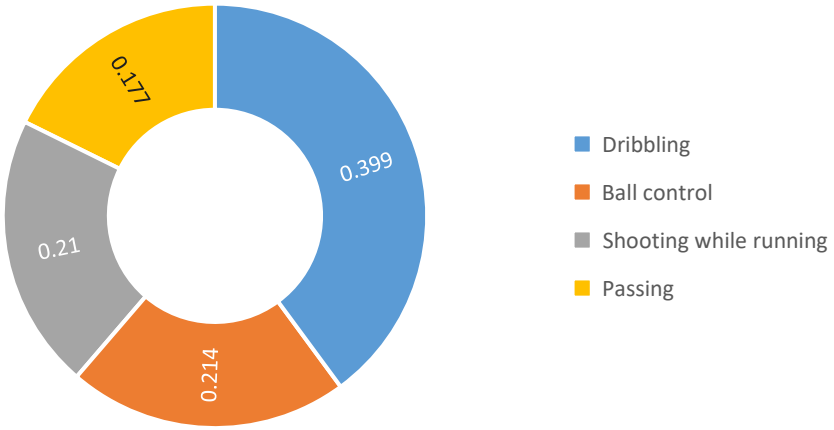

Figure 4. The weights of sub-criteria in technical skills.

Regarding the category of physiological and physical fitness factors, sound reaction time (0.135) was the most important factor. This was followed by aerobic power (0.128), agility (0.115), and speed (0.104) with an inconsistency of .008 (Figure 5).

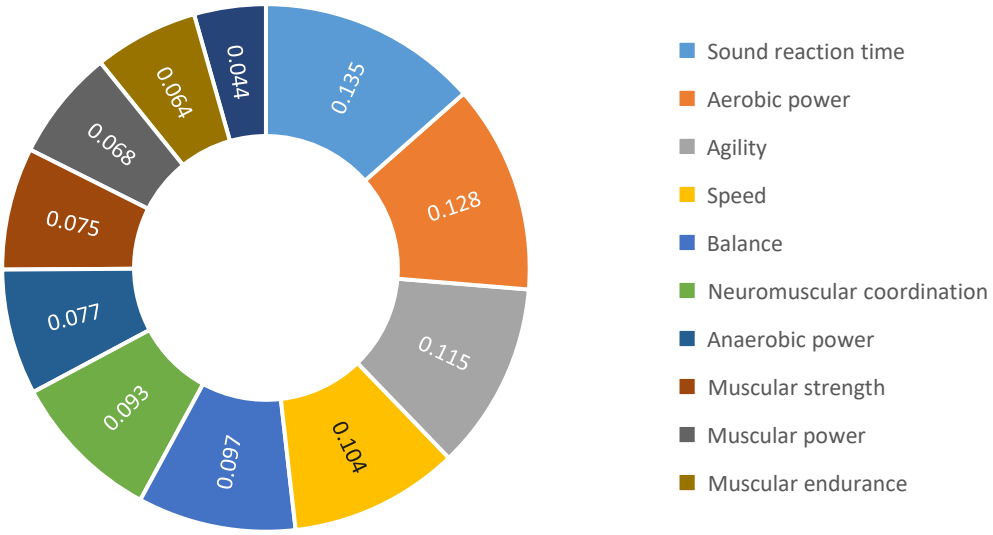

Figure 5. The weights of sub-criteria in physiological and physical fitness factors.

As can be seen in Figure 6, body mass index (0.185) was found to be the most important anthropometrical factor. The least body mass (0.093) and inconsistency value of .02.

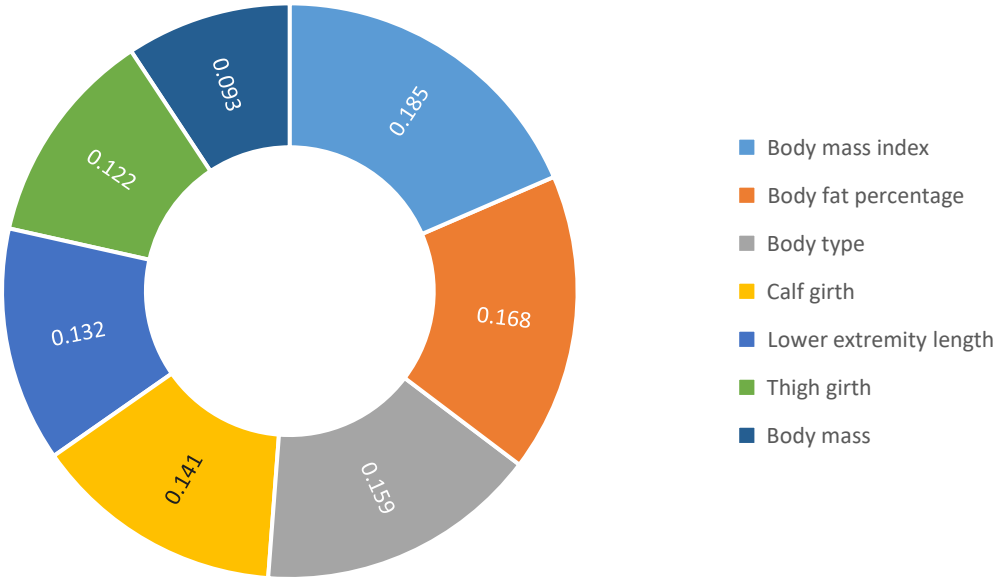

Figure 6. The weights of sub-criteria in anthropometrical factors.

Within the category of psychosocial factors, concentration (0.183) was identified as the most important factor. The least was creativity (0.061) and inconsistency of .03 (Figure 7).

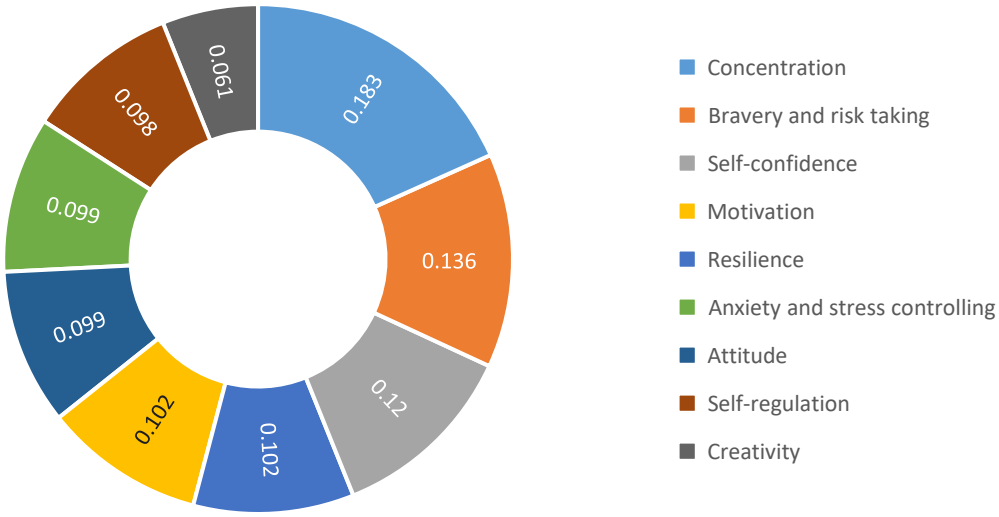

Figure 7. The weights of sub-criteria in psychosocial factors.

The category of impairment-related factors included just one sub-criteria, the onset of visual impairment. The value of inconsistency for all analyses was less than 0.1.

Discussion

The aims of this study were to identify the important factors for talent identification in 5-a-side soccer and rank the agreed-on factors in order of importance. These aims were accomplished by implementation of a validated e-Delphi protocol and an AHP. Following the three phases of the Delphi study, 36 factors obtained consensus and were identified as important for talent identification in 5-a-side soccer. These factors were grouped into six categories, including anthropometrical, physiological and physical fitness, technical, tactical, psychosocial, and impairment-related factors. The results of the AHP demonstrated that tactical skills were of primary importance among the factors associated with talent identification in this Paralympic sport. The remaining factors, ranked in order of importance, were as follows: technical, physiological and physical fitness, anthropometrical, psychosocial, and impairment-related factors.

Tactical Skills

According to the results of the AHP, tactical skills ranked as the most important criterion. Tactical skills, also called perceptual-cognitive performance factors, are said to be crucial when identifying talented youth players in soccer (Feichtinger et al., 2018). It has been mentioned in previous related research conducted on conventional soccer (Kite et al., 2021; Roberts et al., 2019) and futsal (Malekzadeh & Hadavi, 2018) that players who have a higher degree of perceptual-cognitive skills are more likely to be successful compared to players who are less-proficient in these factors. However, it is necessary to mention that 5-a-side soccer has specific features that differ from other soccer modalities. These features include the tactical actions performed by 5-a-side soccer players (Puerto et al., 2018). The results of a Delphi study conducted with the aim of developing a classification system for soccer players with visual impairments demonstrated that the perceptual-cognitive skills of spatial awareness, anticipation, decision-making, and communication are the most important skills for being successful in, and winning, a 5-a-side soccer game (Runswick et al., 2021). In line with these results, the expert panel in the current study believed that these factors are among the most important factors to be considered for talent identification in 5-a-side soccer.

Based on the opinion of the expert panel in the current study, spatial orientation was found to be the most important attribute within the category of tactical skills, followed respectively by verbal communication, decision making, and anticipation skills. Spatial orientation enables blind players to move around during the game and is, therefore, the main attribute to focus on during 5-a-side training (Gamonales et al., 2018; Shiota & Tokui, 2017). Considering the crucial role that sight plays in spatial orientation and the complete occlusion of all visual information during 5-a-side matches, players require a high level of spatial cognitive ability in order to rapidly determine not only their own position on the soccer field, but also the position of the ball and other players (Campos et al., 2014; Giagazoglou et al., 2011; Shiota & Tokui, 2017). In the absence of visual information, sound plays an important role in 5-a-side soccer and the ability to locate the sound source is of utmost importance (Shiota & Tokui, 2017). During the game, players use sounds to determine the locations of their teammates and opponent players to avoid possible accidents (Shiota & Tokui, 2017). The players orient themselves by using sounds, including the sound of the ball, verbal communication within the team, and verbal instructions they receive from the coaches and guides (Velten et al., 2014). Importantly, if players do not recognize their teammate's voices, they might pass the ball to the opponents (Shiota & Tokui, 2017). It is therefore, clear that verbal communication skills are essential in this sport (Gamonales et al., 2018). These skills help the players to locate their teammates and players of the opponent team, to understand the dynamics of the game, and to successfully perform offensive and defensive strategies (Runswick et al., 2021; Shiota & Tokui, 2017; Velten et al., 2014). Consequently, spatial orientation and verbal communication skills are of the utmost importance for talent identification in 5-a-side soccer.

Secondary in importance to spatial orientation and verbal communication skills, decision-making and anticipation skills were other perceptual-cognitive performance factors which obtained consensus. Decision-making is a cognitive process in which players try to decide using their knowledge and perception of a current situation to perform the best action. The quality of decision-making can be defined as the suitability of the decision which is made before performing an appropriate action (Roberts et al. 2019). Anticipation is another cognitive process which refers to an athlete's ability to predict what is likely to happen and to be prepared for it (Feichtinger et al., 2018). In highly dynamic, time-pressured sports such as soccer (Kite et al., 2021; Roberts et al., 2019), futsal (Malekzadeh & Hadavi, 2018), and 5-a-side soccer (Runswick et al., 2021), players are required to anticipate the events and decide on an action promptly, in both offensive and defensive situations. Anticipation and decision-making skills are, therefore, essential for success in 5-a-side soccer.

Technical Skills

Four technical skills were included on the list of agreed-on factors, these being dribbling, ball control, shooting while running, and passing skills. Among these skills, dribbling ranked as the most important skill, followed respectively by ball control, shooting while running, and passing skills. These results agree with the results of previous research conducted on soccer (Kite et al., 2021; Roberts et al., 2019) and futsal (Malekzadeh & Hadavi, 2018), which highlighted that technical skills

are essential for identifying talented players in these sports. Technical skills, such as dribbling and ball control, have been referred to as the most performed skills during soccer (Feichtinger et al., 2018) and futsal (Malekzadeh & Hadavi, 2018) matches, and are potential indicators of performance in these sports. It is believed that these skills may act as a differentiating factor between playing levels (Feichtinger et al., 2018) and players should have high levels of technical skills to be successful in soccer (Feichtinger et al., 2018; Kite et al., 2021; Roberts et al., 2019) and futsal (Malekzadeh & Hadavi, 2018).

In 5-a-side soccer, the same holds true and technical skills, including ball control, dribbling, passing and shooting, are important for optimal performance in this sport (Pennell et al., 2022). For example, to move the defenders of the opposing team around to create space to exploit and use effectively, the attackers often dribble or pass the ball. Despite the similarities regarding the importance of technical skills for success in all soccer modalities, there are some differences between this Paralympic sport, and conventional soccer and futsal pertaining to the percentage of use and the way the technical skills are performed. Compared to conventional soccer and futsal, more dribbling and close control is required in 5-a-side soccer and possession is achieved through ball control and dribbling, rather than passing (Puerto et al., 2018). Moreover, in contrast to conventional soccer and futsal in which most goals are scored after team plays, the goals in 5-a-side soccer are mostly scored after fast plays, which comprise few passes and involve two players or less (Puerto et al., 2018). Although passing skills in 5-a-side soccer are very similar to conventional soccer and futsal, shooting, controlling the ball, and dribbling skills are different (Puerto et al., 2018). In theory, loss of vision should significantly affect multi-articular movements such as dribbling and shooting (Giagazoglou et al., 2011). The expert panel in a Delphi study conducted with the aim of developing a classification system for soccer players with visual impairments identified technical skills as factors most likely to be affected by visual impairments (Runswick et al., 2021). The experts of the same study identified the technical skills of ball control, dribbling, and passing as the most important for success and winning in 5-a-side soccer (Runswick et al., 2021). Our results are in line with this study, except for the exclusion of shooting and the priority of importance of each skill. In our study, shooting a stationary ball was not an agreed-on factor, however shooting while running was. The difference in results may be attributable to the different aims pursued by these two studies. While the aim of the above-mentioned Delphi study (Runswick et al., 2021) was to identify the skills most affected by visual impairments and relevant to classification for players, the purpose of our study was to determine which skills are most important to consider for talent identification. Considered the main offensive action during 5-a-side matches, shooting could be another factor which determines success in this sport (Giagazoglou et al., 2011; Puerto et al., 2018). The results of a study conducted on the efficacy of shots on the goal in 5-a-side matches indicated that the team that shot more throughout the game won the match (Puerto et al., 2018). Therefore, it can be concluded that 5-a-side soccer is a skilful sport and players are required to have high levels of technical skills to be successful.

Physiological and Physical Fitness Factors

As 5-a-side soccer demands movements such as walking, jogging, running, sprinting, changing direction, and dribbling in a zigzag pattern, it is unsurprising that almost all the possible physiological and physical fitness factors were agreed-on as factors essential for success in this sport. In our study, 11 physiological and physical fitness factors were identified as important for talent identification, including aerobic power, agility, anaerobic power, balance, flexibility, muscular endurance, muscular power, muscular strength, neuromuscular coordination, sound reaction time, and speed. Among the factors in this category, sound reaction time was ranked as the most important, followed respectively by aerobic power, agility, speed, balance, neuromuscular coordination, anaerobic power, and finally the remaining physical fitness components. These findings are in line with the results of similar Delphi studies conducted on conventional soccer (Kite et al., 2021; Roberts et al., 2019) and futsal (Malekzadeh & Hadavi, 2018), which have concluded that physiological and physical fitness factors are important factors for success in these sports. Physical fitness components are also important for other Para-soccer events, such as cerebral palsy soccer, and could act as differentiators between the competitive levels of the players (Henríquez et al. 2023).

Regarding physiological and physical fitness features, 5-a-side soccer is very similar to futsal where players are required to move intensely demanding a high energy expenditure and level of

neuromuscular coordination, among other physical fitness factors (Campos et al., 2013). However, despite these similarities, there are some differences between 5-a-side soccer and other soccer modalities because of the absence of vision (Silva et al., 2018). The absence of vision changes the way the players orient themselves on the field as well as how they identify the location of the ball for kicking or passing (Finocchietti et al., 2019). Five-a-side soccer players are required to react to and orient themselves through sound (Biyikli et al., 2018; Puerto et al., 2018). Sound stimuli are not as precise as visual stimuli and if a player loses contact with the ball while dribbling, it is hard to find it again. Therefore, perception of and reaction to sound is crucial in this sport.

In addition to sound reaction speed, aerobic and anaerobic power are two other physiological and physical fitness factors which are essential for 5-a-side soccer due to the demand of intermittent efforts (Campos et al., 2013; Silva et al., 2018). The sport is intense and requires actions such as sprints, sudden stops, changes of direction, and technical efforts. Because players are required to do these actions frequently during a match, they need high levels of anaerobic fitness, but especially aerobic fitness due to the rapid recovery needed for players to do the next task (Campos et al., 2013). Therefore, 5-a-side soccer players should have an appropriate level of aerobic and anaerobic power to achieve optimal performance in this sport. The higher the level of these factors, the better the competitive performance (Campos et al., 2013; Silva et al., 2018).

Agility is another physical fitness component known to be crucial for optimal performance in 5-a-side soccer (Campos et al., 2014; Maehana et al., 2016). During 5-a-side matches, the attacking players require agility to be able to move quickly in a zigzag pattern to disorganize the defence system of the opposing team, and the defending players also require agility to perform defensive tasks (Puerto et al., 2018). A high level of agility is therefore needed for success in this sport (Campos et al., 2014; Maehana et al., 2016). Agility can be defined as a player's ability to change their direction rapidly (Campos et al., 2014; Maehana et al., 2016). This physical fitness component is dependent upon other physical fitness components, including speed, balance, neuromuscular coordination, and strength (Campos et al., 2014; Maehana et al., 2016). Besides being a necessary component for agility, speed is also essential for quick transitions from defence to attack, which is a typical feature of 5-a-side matches (Puerto et al., 2018).

Defined as the ability to maintain the body's position for a desired time period, balance is another physical fitness attribute which plays a crucial role in 5-a-side soccer games. Both components of balance, static and dynamic balance, are important for performance. Indeed, 5-a-side soccer is a sport with high demands on balance control (Campayo Piernas et al., 2017). Other physical fitness components, including muscular endurance, strength, explosive power, and flexibility are also important for moving fast and executing technical skills such as dribbling and shooting (Abdullah et al., 2017). For example, kicking the ball is a technical skill which depends on muscular strength and neuromuscular coordination of several muscles acting around multiple joints (Giagazoglou et al., 2011). These physiological and physical fitness features act as the foundations of 5-a-side soccer and players should have an appropriate level of each to be successful (Biyikli et al., 2018).

Consequently, although tactical and technical skills are very important, they are not alone sufficient for success in this sport. Physiological and physical fitness factors are also crucial and should be considered when detecting talent.

Anthropometrical Factors

Seven anthropometrical factors were agreed-on as factors. Among those, body mass index ranked first, followed respectively by body fat percentage, body type, calf girth, lower extremity length, thigh girth, and body mass. In similar Delphi studies conducted with the aims of determining important factors for talent identification in soccer (Kite et al., 2021) and futsal (Malekzadeh & Hadavi, 2018), anthropometrical factors were also identified as important for success in these sports. The anthropometrical characteristics of athletes differ depending on their sport (Malekzadeh & Hadavi, 2018). In a review study conducted with the aim of determining the important characteristics for talent identification and development in soccer, it was concluded that players who became professionals were slightly taller, heavier, and leaner in adolescence than their peers who did not become professionals (Williams et al., 2020). The findings of another review article revealed that the most successful soccer players are often taller and leaner, compared to other players who are not as successful (Sarmento el al., 2018). However, it has been highlighted that in comparison to physical

fitness factors, anthropometric characteristics might be limited in their ability to differentiate between successful and unsuccessful players, and some studies show no difference in anthropometrical measurements between groups with different levels of skill (Williams et al., 2020). Despite the scarcity of research on anthropometrical characteristics of 5-a-side soccer players, measuring some anthropometrical characteristics may be helpful in detecting talent in this sport.

Psychosocial Factors

Nine psychosocial factors were among the factors agreed-on as important for talent identification in 5-a-side soccer. All agreed-on factors in the psychosocial category were personality-related factors. In order of ranked importance, these included: concentration; self-confidence; bravery and risk taking; anxiety and stress control; resilience; attitude; motivation; self-regulation; and creativity. Although some sociological factors such as parental support, sibling support, and peer support were on the more comprehensive list of factors, none made the final agreed-on list. Based on the opinions of some of the members of the expert panel, these sociological factors may be influential factors for the talent development phase, and not for talent identification. Similar Delphi studies investigated the important factors for talent identification and development in soccer (Kite et al., 2021; Roberts et al., 2019) and futsal (Malekzadeh & Hadavi, 2018) have found that psychosocial factors are among the influential factors for talent identification and development in these sports. According to the findings of a systematic review, psychosocial factors can differentiate between elite and non-elite soccer players and are positively associated with reaching a professional level (Gledhill et al., 2017). According to the findings of the same study, there is a correlation between these factors and engagement in adaptive soccer practice, including 5-a-side soccer.

Ranked as the most important attribute among psychosocial factors, concentration is the ability to take attention away from unwanted stimuli and think about the desired task carefully, or for a long time. Five-a-side soccer places a very high demand on concentration. Players are required to have a high capacity for concentration to be able to direct their attention towards the main sounds and follow tactical plans (Puerto et al., 2018). Furthermore, 5-a-side soccer has a high incidence of injury. Players must not fear injury and move fast enough during the game to perform optimally (Silva et al., 2018). Consequently, psychosocial factors could affect performance and talent development. They are, therefore, important considerations for talent identification in 5-a-aside soccer.

Impairment-Related Factors

From the three impairment-related factors provided, only the onset of visual impairments was agreed-on. Other impairment-related factors, including the cause and the severity of visual impairments, were excluded by the expert panel. These results are in line with a Delphi study investigating expert opinion on a classification system for soccer players with visual impairments (Runswick et al., 2021). The experts in this Delphi study reached a consensus that the age at which a soccer player acquires a visual impairment influences the impact of the visual impairment on performance in this sport (Runswick et al., 2021). There are differences between the spatial cognitive abilities of athletes with acquired and congenital blindness (Shiota & Tokui, 2017), as the latter have never received any kind of visual information which is needed for spatial orientation (Giagazoglou et al., 2011). Moreover, the onset of impairment could influence the course of development, affecting variables such as when and how these athletes enter Paralympic sports and achieve their developmental milestones (Dehghansai et al., 2017).

Conclusions

The aim of this study was to gather expert opinions on influential factors for talent identification in 5-a-side soccer and the importance priority of the agreed-on factors. The agreed-on factors have been categorised into six groups. Tactical skills ranked as the most important set of factors, followed respectively by technical skills, physiological and physical fitness factors, anthropometrical factors, psychosocial factors, and impairment-related factors. Tactical/technical skills are, therefore, factors of the utmost importance for optimal performance and subsequently talent identification in 5-a-side soccer. However, the factors in other categories are also influential and need to be considered during talent identification. In conclusion, talent identification in 5-a-side soccer is a multifaceted process and players are required to be good at various factors for success in this Paralympic sport.

Perspectives

Physical activity plays an important role in the promotion of physical and psychological health, especially for those with impairments. Moreover, participation in physical activities and sports is beneficial for healthy ageing and may also improve social involvement and quality of life. Unfortunately, research indicates that individuals with visual impairments tend to be less physically active compared to their peers without impairments. Furthermore, individuals with visual impairments tend to become less physically active as they age. Due to being less physically active compared to their peers without impairments, individuals with visual impairments are developmentally behind their sighted peers in motor skill competence and are at a greater risk for developing health-related issues associated with a sedentary lifestyle, such as cardiovascular disease and obesity. Importantly, due to factors such as sensory impairments and psycho-social barriers, individuals with visual impairments may find it difficult to participate with people without impairments in sports activities. Therefore, providing suitable opportunities for this population to participate in physical and sports activities is of great importance. Talent identification and development in sports specifically designed for individuals with visual impairments could help to address these issues.

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Author Contributions: Conceptualization, M.T., A.S.M., and F.M.; Methodology, M.T., A.S.M., and F.M.; Formal Analysis, M.T., A.S.M., and F.M.; Writing-Original Draft Preparation, M.T., A.S.M., and F.M.; Writing-Review & Editing, M.T., A.S.M., and F.M.; Supervision, A.S.M.

Funding: This research received no external funding.

Availability of data and materials: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Acknowledgments: We would like to express our greatest appreciation to each and every member of the expert panel. This paper and the research behind it would not have been possible without their collaboration.

Conflicts of Interest: The authors declare no conflict of interest.

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