

## Talent identification and development of youth fencers: coaches' perspectives

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### ABSTRACT

Talent identification (TID) in sports has been found to be heavily influenced by the expertise and judgment of the coach. However, the factors that inform this judgment have been found to be complex and understudied, especially in the sport of fencing. Inconsistencies have also been found in the concept and construct of TID in the development programs of young athletes. Therefore, the purpose of this study was to identify the essential criteria that inform TID in young male fencers aged between 12 and 15 years and to describe the criteria in the selection of young athletes to a fencing club. A qualitative research methodology was employed in this study. In this research, six male coaches from professional clubs affiliated with the Iraqi Fencing Federation were interviewed. The results of this study revealed that technical, tactical, and mental factors, especially fencing ability, decision-making capacity, and intrinsic motivational factors, were found to be essential in TID. Physiological, physical, and anthropometric factors were also found to be of little importance in TID. In conclusion, TID in young fencers needs to be informed by a holistic approach that considers different dimensions of development. Further research in this area needs to be conducted to refine the criteria in TID.

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## 1. INTRODUCTION

The term “talent identification” (TID) in fencing refers to the identification of individuals who exhibit certain qualities and potentials that are considered to be necessary to achieve high-level performance, based on certain evaluative criteria [1]. Such a process is considered to be a complex issue, given that fencing performance is a result of a combination of several factors, including physical, technical, tactical, and psychological qualities that change dynamically during training and competition phases [2], [3]. In the past, TID in fencing was mainly based on observations made during training and competition phases to assess the abilities and future potentials of athletes [4]. In this context, talent is generally considered to be “the presence of certain abilities that exceed the average level in a given sport” [5]. However, several predictors of fencing performance have been identified, including technical, perceptual-cognitive, physiological, anthropometric, and psychological qualities, as reported in the literature during recent years [6], [7]. Specifically, technical and tactical qualities have been considered to be indicative of long-term success, while psychological qualities, including motivation, discipline, and resilience, are also considered to be significant in athlete development [8].

Despite the increasing amount of literature being published in the area of TID in fencing, there is still ambiguity in relation to what factors coaches use in the selection and development of young athletes. Previous studies have found that anthropometric, physiological, mental, and social factors are not as important as technical and tactical skills in TID in fencing [2], [9]. However, more recent studies have found that coaches may use physiological and anthropometric factors in tandem with technical and tactical skills in TID process [10]. While the perceptions and knowledge of the coach in fencing can be considered some of the important factors in TID. These have not been researched to any significant extent [11]. Another important factor in TID in fencing is the relative age effect (RAE), where athletes may be selected based on their chronological age, with biological maturation affecting their selection [12], [13]. Although studies have found that there are no significant differences in technical ability between early- and late-maturing athletes, coaches do not use this factor in TID in fencing [14], [15]. These inconsistencies highlight the need for further investigation into how coaches conceptualize talent and apply identification criteria within youth fencing development systems.

Coaches are also seen to largely rely on intuition, also known as their “intuitive judgment”, in identifying talented athletes. This intuition, at times referred to as “the coach’s eye”, is viewed as an important aspect in TID, as it enables coaches to identify athletes with potential, as seen from characteristics that, through experience, are associated with potential for excellence in the future [16]. This intuition or “intuitive judgment” by coaches can be viewed as a pattern recognition ability, which comes from experience and practice over the years, helping coaches to automatically recognize potential when seen [11]. As Alwan *et al.* [17] stated that many fencing coaches are not seen to adhere to precise criteria or comprehensive evaluations in selecting players. In addition, precise criteria and comprehensive evaluation methods for TID are recommended in various institutions and sports clubs [18]. The purpose of this study was to address these gaps in the following ways: to identify the main criteria employed by coaches in identifying talent in young male fencers aged between 12 and 15 years, and to describe the process employed by coaches in selecting athletes for a fencing club. Thus, the research questions guiding the study were:

- What are the main criteria employed by coaches in identifying talent in young male fencers aged between 12 and 15 years?
- How do coaches integrate these criteria in the selection process for athletes to join a fencing club?

## 2. METHOD

This study was designed to incorporate a qualitative approach that makes use of a semi-structured interview methodology to gain a deeper insight into the criteria that coaches apply when identifying and developing talent. The semi-structured interview methodology was chosen for this study because it provides a structure that allows for the exploration of unexpected ideas that may arise during the interview process [19]. The use of a predetermined interview schedule was also chosen for this study to enable the exploration of all the relevant topics that the participants may cover during the interview process, while the use of open-ended questions was chosen to enable the exploration of the experiences of the participants and the application of a specific criterion for TID and development, which is essential for gaining a deeper insight into the experiences of the participants and the application of a specific criterion for TID and development [20]. The process that was followed to achieve the objectives and the research questions of the study is illustrated in Figure 1 and is systematically outlined in the following section of the study.

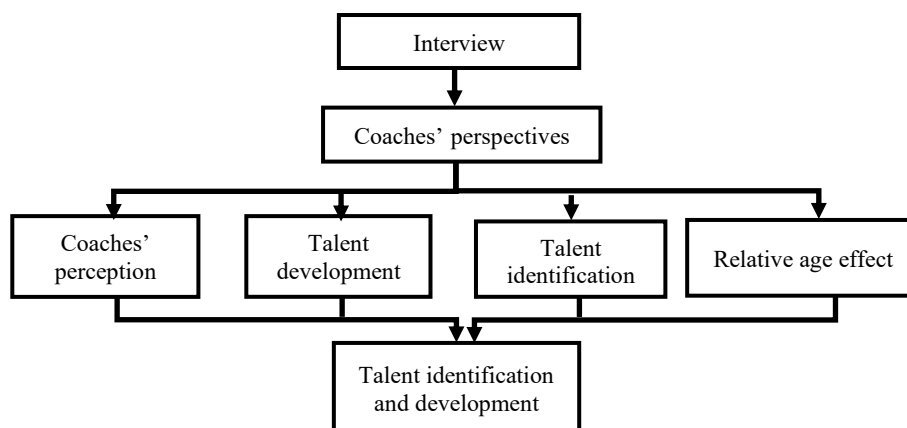


Figure 1. Research methodology

## 2.1. Participants

In the current qualitative study, purposive sampling was used to recruit participants for the semi-structured interviews. The sampling method was employed to ensure that the selected individuals had the required experience and knowledge regarding TID in fencing. As stated by Gay *et al.* [21], the sample size in qualitative studies is generally small, especially when conducting studies in the field, as even a small number of participants can be effective. The sample size in qualitative studies may vary from one to 70 participants, depending on the context and requirements. However, most qualitative studies are carried out with fewer than 20 participants. The factors that affect the sample size are budget constraints, time, interest, and accessibility [21]. Therefore, the current qualitative study was carried out with six active male coaches from professional Iraqi fencing clubs and the Iraqi Fencing Federation. The average age and coaching experience of the participants were found to be 39.83 years (SD=6.23) and 15.83 years (SD=4.35), respectively. Out of six participants, three had Ph.D., one had a master's, and two had bachelor's degrees in physical education and sport sciences, as shown in Table 1.

Table 1. Coaches' demographic information

Age	Coaching experience	Level of education	Organization
42	19	Ph.D.	Federation
41	17	Ph.D.	Club
41	16	Ph.D.	Club
39	15	Master	Federation
39	15	Bachelor	Club
37	13	Bachelor	Club

## 2.2. Protocol

After presenting an explanation of the purpose of the study and its objectives, informed consent was obtained from all participating coaches. This was done by ensuring all participants were aware of the confidentiality of all responses and any associated results from assessments. Semi-structured interviews were conducted to obtain responses from the coaches about talent, TID, and the talent selection process. This was done by creating an interview guide to structure the discourse. This involved asking questions about what the coach's perspectives were about talent, TID, and the talent selection process. This allowed for additional questions to be asked to obtain more in-depth responses from the participants. Each interview was conducted individually using a face-to-face approach. Each interview was conducted within a one-hour timeframe.

## 2.3. Statistical analysis

Each interview was audio-recorded. To ensure confidentiality, an identification code was given to each coach ranging from 1 to 6. Braun and Clarke's six-step qualitative data analysis was employed [22]. Braun and Clarke [22] argue that qualitative data analysis occurs in six steps: reading and re-reading the data, initial coding, generating themes, refining themes, defining key topics, and creating a report. Firstly, reading and re-reading was employed to obtain a better understanding of the data. This was done by creating initial codes. This involved creating codes such as TID and perceptions. A deductive coding technique was employed to obtain more in-depth themes within the initial codes. This involved creating codes such as "motivations" within mental skills. This was done by the first author. This was followed by coding by the second and third authors to increase reliability. This was done by creating key topics based on ongoing reflections from participants. This was followed by creating a report based on the findings. Four main themes were obtained from the interviews: perception of talent, talent development, TID, and RAE.

## 3. RESULTS

### 3.1. Coaches' perception of talent

To gain insight into what coaches think about talent in fencing, participants were asked to reveal what they believed was their overarching conception of talent. Most of the coaches believed that talent was a combination of possessing exceptional or rare abilities, which set an athlete apart from others. Moreover, talent was seen as an athlete's ability to achieve a high level of performance or become an elite athlete in the future.

*"Talent is possessing unique or exceptional abilities, something that sets one athlete apart from others, whether in fencing or another sport."* (Coach 1)

However, another coach offered a contrasting idea about what talent was all about. This coach believed that talent was not just about possessing exceptional ability but was also a combination of passion, commitment, and enjoyment.

*“Talent is a multifaceted concept, but I highlighted personal motivation as a key aspect of talent.”* (Coach 4)

This coach believed that a talented athlete was one who enjoyed fencing a lot. Moreover, such an athlete was one who was dedicated to training and showed a lot of perseverance. While recognizing that talent was more than just passion, such a coach believed that passion was the foundation of talent.

Overall, all the coaches believed that talent was exceptional, whether in terms of performance, skills, or passion. However, all the coaches were in agreement that a passion for fencing was one aspect of talent, which translated to long hours of training and enjoyment during training. This eventually led to the development of talent. Table 2 provides a summary of what all the six coaches believed about talent.

Table 2. Coaches' perceptions of talent

Coach perspective	Summary of key points
General definition of talent	Talent from a coach's perspective is a unique or unusual ability.
Future potential	Talent is also defined as high performance or being among the elite in the sport of fencing.
Coach 1 perspective	Talent is a unique ability that differentiates an athlete.
Alternative view (Coach 1)	Talent also includes passion and dedication to training as well as enjoyment of training.
Coach 4 perspective	Talent is a broad and diverse construct in which motivation is a unique feature.
Motivation as central	A talented athlete is disciplined, enjoys training, and has a long-term motivation to improve.
Common view across coaches	The prevailing view is that talent is a unique or unusual performance, skill, or passion.
Role of enjoyment and practice	Enjoying training is positively associated with training hours, and therefore with the potential for talent development.

### 3.2. Talent development: the skills that matter

When asked to specify the characteristics that are associated with talented fencers between the ages of 12 and 15, the coaches provided slightly differing opinions, but all agreed that technical and tactical skills are the key aspects that matter most in determining talent. A few coaches pointed out aspects such as technical accuracy, tactical acumen, and mental acuteness as the most important aspects to consider when evaluating the potential and possible success of young athletes in the sport.

*“Talent is young fencers focuses mainly on creativity and cognitive ability. The coach valued athletes with highly developed skills in close-range combat and accurate touch. The most skilled and creative athletes are those who spend most of their time training and practicing on their own with the fencing sword.”* (Coach 1)

While the previous two coaches focused on the significance of technical and tactical skills, the other two coaches also emphasized the significance of psychological and motivational factors as an important aspect of talent within the age group of 12-15. The coaches considered genuine interest in fencing, high motivation levels, determination, and willingness to train as important aspects in the development of technical and tactical skills. The coaches also emphasized that practice and training through passion and motivation are important in shaping the long-term potential of young fencers.

*“Talent is fencing depends on personal qualities such as presence, motivation, and an innate desire to succeed.”* (Coach 5)

These personal qualities develop from an early stage through consistent training and practice in the sport. While technical and tactical skills are important in fencing, Coach 5 confirmed that these are not enough to be considered as important aspects of talent in fencing. The mental and psychological aspects are very important in an individual sport such as fencing. The psychological variables are important in the context of an individual sport.

While assessing the role of coaches in incorporating the athletes' ability in training sessions, all the coaches considered technical and tactical skills as important aspects in training sessions. However, the significance given to technical and tactical skills and the rationale for the same were not similar among all the coaches. Coaches 4, 6, 3, and 2 provided interesting insights regarding the mutual relation between technical and tactical skills during talent development. Coach 4 argued that there is mutual relation between

technical and tactical skills, and that the former, termed as basic skills, is crucial from the age of 14. The absence of such skills is seen as restricting the athlete's potential to develop. Furthermore, tactical skills are seen to develop gradually through playful learning and games at younger ages, whereas more significant developments are seen to occur between the ages of 13 and 19 as the athlete is able to interpret and apply tactical skills more effectively.

Coach 6 argued that the most crucial skill during the early stages of developing a young fencer is their technical skills, whereas tactical skills are seen as one skill that is developed later during the athlete's progression. This is seen as more segmented, where one skill is given more importance before moving to the next one. A similar perspective was given by Coach 3, whereas tactical skills are seen to be more emphasized during training sessions at the club.

Coach 2 acknowledged the fact that it is hard to give more importance to one skill than the other. Where, given the priority to decision-making skills, game understanding, and the athlete's ability to make effective decisions during competitions. The coach personally gave more importance to athletes with good judgment, indicating that decision-making skills may be more easily developed than technical skills. Table 3 presents the perspectives of six coaches regarding talent development and their views on the importance given to various skills.

Table 3. Coaches' perceptions of talent development

Coach perspective	Summary of key points
Core talent indicators	Possessing technical and tactical skills are the core talent indicators for young fencers between 12-15 years.
Technical precision and tactical awareness	Technical accuracy, tactical awareness, and mental acuity were considered key predictors of future performance.
Coach 1 perspective	Creativity, decision-making, and technical skills in close combat situations were highlighted as feature's young talented.
Independent practice	Fencers who have trained independently are more creative and technically skilled.
Coach 1 and 5 perspectives	Passion, motivation, determination, and willingness to practice were considered key contributors to young fencers' future development.
Role of sustained practice	Fencers' motivation-driven practice was considered key in shaping young athletes' future potential.
Coach 5 perspective	Presence, intrinsic motivation, and motivation were considered key features of talented young fencers, particularly in individual sports.
Training priorities	Despite differing philosophies, there was agreement on the priorities of training on technical and tactical skills for young fencers.
Coach 4 perspective	Technical skills are established in young fencers by the age of 14, while tactical skills are developed gradually from playful learning and continue improving from ages 13-19.
Coach 6 perspective	Technical skills were considered the most important skills for young fencers in early stages, with tactical skills improving with development.
Coach 3 perspective	Although technical skills were a priority, tactical skills received greater attention.
Coach 2 perspective	Decision-making, understanding of the game, and strategic skills were prioritized, with cognitive skills considered easier to develop than technical skills.

### 3.3. Talent identification

All the participating coaches agreed that their evaluation of the athlete's talent and potential was based on a certain degree of subjective judgment. They were aware that personal experiences and coaching philosophies were integral components in the evaluation of young fencers. Coach 4 further explained that the selection procedure often relies on the evaluation of the players' ability to adapt within the training environment. In this regard, the coaches explained that the evaluation procedure is done by integrating the athlete into the training session to assess their ability to adapt to the club's tactical approach and meet the performance requirements set by the coaching staff.

The findings revealed a wide range of variations among the club coaches in their approach to talent evaluation. Some of the coaches had a systematic approach to talent evaluation by adhering to the criteria set by the Iraqi Fencing Federation for the evaluation of athlete talent and potential. In this regard, the coaches focused on the evaluation criteria considered essential for the development of national-level athletes. In contrast, other coaches emphasized the evaluation of athlete talent and potential according to the specific tactical requirements of their respective clubs. In both cases, the reliance on subjective judgment and personal interpretation remained high.

*“Talent is a strong sense of interest and motivation toward the sport, suggesting that these qualities play a key role in how early talent can be recognized. A true interest and enthusiasm for the sport of fencing seem to be evident at a young age. In our club, two of our 12-year-old fencers show a true interest and enthusiasm for the sport of fencing by taking every opportunity they can to practice their sport.” (Coach 6)*

The coaches further explained that a strong passion and enjoyment of the sport of fencing lead young athletes to practice on their own, which can greatly benefit their development. Although the coaches agreed that it is possible to recognize talent at a young age, they also agreed it was a difficult task, especially when it was based on the performance of children as young as nine or twelve years old. The coaches said it was a complex task to predict the future of young athletes.

Coach 2 recognized that *“the challenge posed by the need to differentiate between the present performance and the potential talent present in young sportspeople.”* A 9-year-old may perform better than their peers at their respective age groups; however, this does not necessarily mean that the young sportspeople possess long-term potential. In this regard, the coach argued that it is easy to relate the present performance to talent; however, talent can only be related to future growth and development. The coach further argued that the future growth and development of young sportspeople are extremely difficult to predict; therefore, TID process is a complex one.

According to Coach 5, between the ages of 12 and 14 years, the technical and coordinative ability of a fencer starts to appear. At this stage, the fencer’s technical and coordinative ability can be observed by the coaches. However, by the age of 16 years, the difference between the fencers is more pronounced as the young fencers are making crucial life decisions concerning their education and priorities.

Even though the coaches agreed that the performance by young athletes can be observed at an early stage as a means of identifying talent, the coaches also emphasized the need to differentiate between the present performance and the potential talent. This is because the young sportspeople may perform extremely well at an early stage; however, this does not necessarily mean that the young athletes have the potential to perform even better in the future. This is because other factors may influence the growth and development of the young sportspeople. The factors may include the motivational factors and the personality traits of the young athletes. However, this is extremely difficult to assess at an early stage; therefore, the differentiation between the present performance and the potential talent is a complex one. Table 4 shows the perspectives of the coaches on TID.

Table 4. Coaches’ perceptions of TID

Coach perspective	Summary of key points
Subjective nature of TID	It was agreed that the evaluation of talented individuals depends on the personal judgment of the coach, based on his experience, intuition, and training philosophy.
Adaptation to training environment	Coach 4 stressed the need to assess talented players during their participation in training sessions to evaluate their ability to adapt to the club’s tactics and achieve performance goals.
Variation in selection approaches	Some of the coach’s approaches were in line with the standards of the Iraqi Fencing Federation, while others were based on technical and tactical skills.
Reliance on personal interpretation	Despite the differences in the context, the reliance on subjective evaluation was evident in all coach responses as a criterion for evaluating talented players.
Role of motivation and interest	Coach 6 pointed out the importance of motivation in identifying talented players.
Impact of self-directed practice	Great enthusiasm for fencing leads to more training, improved performance, and identification of talented players.
Challenges of early identification	Identifying talented players among children aged 9 to 12 is a challenge, as performance does not always reflect the possibilities.
Distinguishing present ability from future potential	Coach 2 emphasized the risk of confusing early success with actual talent.
Emergence of skills with age	Coach 5 emphasized that skills become evident in players between the ages of 12 and 14.
Complexity of predicting long-term success	Performance in young players can be a reflection of future potential.

### 3.4. Relative age effect

The coaches recognized that RAE could play a role in TID for young fencers. The participants showed awareness of the concept and the challenges it poses. The coaches also showed more awareness of technical and tactical abilities than physical qualities when evaluating fencers, which helps to reduce RAE. Coach 1, however, also pointed out that *“physical development is an advantage for young fencers.”* This is because, in many cases, early-physically developed fencers perform better than their peers. Coach 1 also pointed out that early-physically developed fencers may also experience technical or tactical deficiencies because they often rely on their physical qualities during training and competitions.

*“Early physical development can provide a clear advantage, enabling athletes to perform efficiently and achieve immediate results.”* (Coach 3)

However, early-physically developed fencers may also experience deficiencies in technical or tactical skills because of their physical qualities. On the other hand, fencers who are not early-physically developed may also benefit from their physical qualities because they may develop better technical or tactical skills.

The coaches also pointed out that early-physically developed fencers receive more attention from coaches and clubs, which provides them with better training opportunities. However, this also means that other fencers who are also talented but not early-physically developed are neglected, thus limiting their opportunities for growth. The opinions of the participants were also divided about whether RAE can lead to talented players being overlooked. Some participants agreed that talented players can actually be overlooked or drop out too early because of early selection bias. However, other participants argued that talented players would eventually be spotted regardless of their disadvantaged status, showing different opinions about whether RAE can influence long-term TID.

Coach 5 argued that some players might not fulfill their potential because they are likely to drop out too early. The coach also argued that sometimes coaches might be impatient and might not give players enough time to fulfill their potential. Coach 4 was confident about “*the effectiveness of the current selection method in identifying talented players.*” This suggests that the best players are being selected. However, the coach also argued that it is possible that this method might overlook more players who, if well developed, might also reach a good standard. Table 5 summarizes the opinions of the coaches about RAE.

Table 5. Coaches’ perceptions of RAE

Coach perspective	Summary of key points
Awareness of RAE	All coaches showed awareness of RAE and its ability to affect TID in youth fencing.
Physical maturity and early advantage	Early physical maturity creates a competitive advantage for athletes.
Technical and tactical compensation	Physical maturity may create a feeling that physically mature athletes may compensate for this with strength rather than technique, which may lead to a lack of skill.
Coaching attention and opportunities	Athletes who mature early receive more attention, support, and training opportunities.
Risk of overlooking talent	Participants were divided on whether selecting players based on early maturity leads to overlooking talented players.
Premature dropout and coaching impatience	According to Coach 5, early withdrawal from sports leads to athletes failing to reach their full potential.
Confidence in current selection practices	Coach 4 pointed out that overconfidence could lead to overlooking talented athletes who could be considered for long-term development programs.

#### 4. DISCUSSION

The main research question of this study aimed to answer was: “what are the main criteria employed by coaches in identifying talent in young male fencers aged between 12 and 15 years?” The study’s findings suggest that coaches use technical, tactical, and psychological criteria to identify talent among young fencers. In this regard, technical proficiency was the key factor coaches considered when identifying talent among young fencers. This included the ability to perform basic fencing movements and proficiency in handling fencing equipment. Tactical proficiency, particularly the decision-making capacity of young fencers during a fencing bout, was also an essential factor for coaches. In addition, psychological factors such as motivation, commitment, and perseverance were also key factors for coaches. Physiological factors were considered less important by the coaches. Although the coaches recognized the importance of physiological factors, this factor did not seem to influence their talent selection decisions.

The second research question this study aimed to answer was: “how do coaches integrate these criteria in the selection process for athletes to join a fencing club?” The findings suggest that the selection criteria were mainly applied through subjective evaluation. In this regard, the selection of young fencers for a fencing club depends on the evaluation of young fencers during training and competition situations. The selection criteria were mainly based on the coaches’ experiential knowledge, which refers to the “coach’s eye”. Although the selection criteria were mainly based on the experiential knowledge of the coaches, the selection criteria were influenced by the club’s tactical philosophy. In this regard, the selection criteria were mainly influenced by the personal judgment of the coaches.

The findings demonstrate that the intrinsically complex nature of fencing poses considerable challenges to forecasting who among young athletes will finally succeed in senior-level competition [23]. As predicted by previous research, technical and tactical skills were emphasized by all coaches as factors of potential success [24], [25]. This result supports previous research on talent selection criteria, where there was a continued reliance on subjective judgments and cultural variations [26], [27].

The views of the coaches in this research are in line with the literature that defines the meaning of the term “talent” as individuals who possess above-average abilities [28]. The coaches emphasized the importance of the possession of certain skills, i.e., attack, defense, and speed, as determinants of success in the future [29], [30]. A number of coaches (6 and 3) also emphasized the importance of game knowledge as

a tactical skill that falls under the umbrella of the term “talent”, as has been suggested by qualitative [31]–[33] and quantitative [10], [29] research on the subject. This may be explained by the complex nature of the task of identifying talents, as was emphasized in the research on young athletes who later achieved excellence at the highest level [34]. The coaches (1 and 5) also emphasized the importance of motivation, the eagerness to learn, the willingness to train, and the enjoyment of the sport as key factors of the term “talent”. Although this goes beyond the scope of the sport itself, it may be seen as a holistic approach to the subject of identifying talents. These views of the coaches are also in line with the literature on the characteristics of elite performers, who are said to be internally motivated, disciplined, and resilient, although it has also been suggested that these individuals may have different personalities [35], [36]. The literature has also suggested that the interest of the individual in the sport plays an important role in the development of the individual, as has been emphasized by earlier research on the subject [37].

The research also showed that coaches do not place much emphasis on physiological qualities, a trend also supported in earlier research, which considers these qualities to be more trainable [30]. The differences in these qualities are often explained in terms of long-term systematic training rather than inherent potential [9]. Although research supports the idea that qualities like speed and strength can act as important predictors of future elite success, overemphasizing on physiological superiority can lead to misleading conclusions [29]. The second issue, as indicated by this study and other research, is the perceived favoritism shown to early-developing players, as they are given more focus, training, and development opportunities, potentially at the expense of late-developing yet equally skilled players [11], [34]. This is usually seen as part of RAE, a well-known issue affecting talent selection [38].

Despite this, the coaches in the current study observed that late bloomers often have the potential for success later on, even though they are not identified early on. However, existing literature suggests that early selection can have long-lasting benefits in terms of increased opportunities for high-quality coaching and monitoring [39]. Coaches in the current study from sports clubs observed that players can experience a breakthrough even without early selection, as the process of evaluation occurs in a short-term context. Significantly, the coaches in the current study emphasized that the performance difference due to RAE diminishes in skills considered most important for success in a particular domain [15], [40]. Moreover, the coaches in the current study proposed that less developmentally mature players can still develop other skills, for example, technique, which can help them succeed in spite of physical disadvantages.

Significantly, all the coaches in the current study agreed that early identification of talented players can be made on the basis of existing technical skills, though they also acknowledged the complex nature of player development as well as the identification process itself. This perspective resonates with existing literature, which suggests that technical skills can be used as early markers of elite and non-elite players [27]. Significantly, technical skills are also less affected by RAE, which makes them even more important for early identification [15], [38]. However, the results also suggest that coaches might be mistaking technical skills for performance outcomes, which can be a fallacy because performance can be due to physical advantages, not actual potential for success in the long term.

The findings of this study have practical implications for fencing academies and federations; for instance, the importance of sport-specific skills, decision-making skills, and intrinsic motivation is emphasized through the integration of technical, tactical, and psychological factors. On the other hand, the reliance on judgment emphasizes the importance of developing more scientific methods for TID that may aid coaches’ decision-making processes. Moreover, late developers should also be considered in TID schemes, taking into consideration factors such as RAE. Such a holistic approach may prove to be beneficial for the efficiency of TID schemes and athlete development systems in fencing.

## 5. LIMITATION AND FUTURE STUDIES

The main limitation of this research stems from the small sample size and the controlled environment, which makes it difficult for the results to be generalized in other sports environments. In addition, the use of a qualitative approach, which highly depends on the feedback from the coaches’ interviews, makes content validity and face validity a concern, especially in ensuring that the criteria and methods used are sufficient in measuring the potential for talent. Future research should seek to produce a comprehensive and evidence-based model in the identification of talented individuals in fencing and other individual sports. This can be achieved through longitudinal and multidisciplinary research, which takes a holistic approach in examining the physical, technical, cognitive, and psychological aspects of talented individuals. This could help in the development of a more accurate, reliable, and comprehensive assessment in identifying and developing talented individuals in fencing and other individual sports.

## 6. CONCLUSION

This research has yielded interesting qualitative results regarding the criteria used by youth fencing coaches in Iraq for TID. The results showed that the criteria used by the coaches include technical, tactical, and psychological factors, such as fencing skills, decision-making, and intrinsic motivational factors, respectively. However, physiological, physical, and anthropometric factors were considered secondary factors, which is consistent with previous studies. RAE was also considered a factor by the coaches, but a few of them had knowledge of how to mitigate its effects. The results highlight the need for a holistic approach in TID, which considers different aspects of talent development. This research has also shown that there is a need for further research that will help refine the criteria for TID, as well as a need for a longitudinal study that will consider different roles played by coaches in TID process.

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C : **C**onceptualization

M : **M**ethodology

So : **S**oftware

Va : **V**alidation

Fo : **F**ormal analysis

I : **I**nvestigation

R : **R**esources

D : **D**ata Curation

O : **O**riting - **O**riginal Draft

E : **E**riting - **R**eview & **E**ditng

Vi : **V**isualization

Su : **S**upervision

P : **P**roject administration

Fu : **F**unding acquisition

## CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

## DATA AVAILABILITY





Restrictions apply to the availability of these data, which were used under license for this study.

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