The Development of a Talent Identification Support System (STIDSS) for Sports Talent at School

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Abstract
A significant advancement in the field of sports talent identification is the Sports Talent Identification Support System (STIDSS). This synopsis encapsulates the methodology employed, the results attained, the suggestions for pragmatic execution, and the possible implications for subsequent investigations. Utilising a data-driven approach, STIDSS gathers comprehensive data from numerous sports disciplines. Machine learning algorithms are used to process this data, enabling real-time tracking and assessment of athletic potential. This all-encompassing method offers accuracy and early talent identification. STIDSS has improved the accuracy and efficacy of talent detection. Early talent identification is a historic achievement that could transform young sports initiatives. Integration with training courses and collaboration with educational institutions are recommended to maximise STIDSS. These steps will support athletes' development and academic well-being. The launch of STIDSS sets the groundwork for further in-depth study in the future. Scholars have the ability to explore its relevance across many sports domains, adjust its formulas, and scrutinise its enduring impact on the growth of athletes. The discovery and study of athletic talent has the potential to be completely transformed by STIDSS.
Keywords: Talent Identification, Sports, Physical Education, Children's Sports, Talent Identification System

Introduction
Through the process of talent identification, a student's latent abilities and untapped potentials in the realm of physical activities and sporting prowess can be uncovered. The process of determining a performer's level of competence and providing that individual with the opportunity to engage in an activity that plays to his or her strengths is known as talent identification. It has been suggested in multiple studies, including one by Gould and Carson (2008), one by Meylan et al (2010), and one by Davids et al (2000), that brilliant children

should be selected for opportunities based on how good they will be in the future rather than on how good they are now. According to William and Franks (1998), a talent identification programme should address four common phases, which are talent detection, talent identification, talent selection, and talent development. These four phases are all related to talent.

A "talent" can be defined as an artistic accomplishment, a natural endowment, or an aptitude that is of a superior level. Talent is a marked innate ability. According to Malina & Lopez-Alina (2010), another definition of talent is "any internal capacity that allows an individual to show a high performance in a domain that requires skills and training." According to Meylan et al (2010), "talent" refers to a trait or substance that an individual or group possesses that differentiates them from other individuals, typically about a certain topic, and sets them apart from others.

Talent is able to be defined as an individual's exceptional aptitude that is above average in comparison to their normal aptitude (Hoffmann and Wulff, 2015). An individual's special aptitude can be classified as functional, expressive, or athletic (Hoffmann and Wulff, 2015). Talent in sports is defined as the ability to perform at a level that is higher than the regular standard, and those skills are not yet developed or polished (Williams & Franks, 1998). Talents that are linked to physical activity are described as the ability to perform at a level that is higher than the normal standard. According to Pinder et al (2013), people who are talented in sports will have particular qualities, and these attributes have the potential to lead to achievement in future performances. Therefore, it is essential to run programmes aimed at recognising potential talent in order to locate young athletes with a lot of talent who could become trainers in the future.

The discovery of talent in sports has typically been associated with individual sports that have distinct physical and physiological needs, such as cycling, running, rowing, and other similar activities. However, studies conducted on team sports such as basketball (Hoare & Hunt, 1999a; Hoare & Hunt, 1999b), men's football Hoare (1999a), netball Hoare (1997), and women's football Hhas (2000) have been able to successfully isolate the contribution of selected anthropometric and physiological attributes to sports performance.

Even before it was a fully independent nation, Malaysia has maintained a strong presence in the world sporting community. Since 1956, Malaysia has taken part in the Olympic Games, and since 1954, it has participated in the Asian Games, and since 1950, it has taken part in the Commonwealth Games and the Sea Games. Since then, Malaysian athletes have competed in a variety of competitions and won multiple medals across the board. Despite having previously won silver and bronze medals in badminton in the Olympic Games in Barcelona in 1992, Atlanta in 1996, Beijing in 2008, and London in 2012, Malaysia has not yet been successful in winning an Olympic gold medal. This was the case in London in 2012. At the 2016 Summer Olympics in Rio de Janeiro, Malaysian athletes took home one bronze medal and four silver medals (Olympic Council of Malaysia, 2016). Therefore, the present moment in Malaysia is the optimal opportunity to properly carry out a TID programme in order to discover fresh talents that can assist Malaysia in realising its dream of winning its first gold medal in the Olympics.

In terms of the development of the TID technology, Malaysia is still behind other well-established countries that have earned a positive name on the international stage of sports. These nations established a technological method in order to find talented athletes in a variety of sporting events and activities. In addition to this, the system makes it easy to analyse and analyse the data by providing a user-friendly interface. The necessary amount of time for the implementation and operation of the TID programme is cut down as a result of this. For the TID programme software, for instance, Australia employs E-TID, while Croatia relies on The Expert System for Sports Talent Detection. Alternately, Namibia is now utilising the Proactive TID, and Slovenia is in the process of implementing the Sports Measurement Management System (Rogulj et al., 2006). These newly established techniques, on the other hand, were only concerned with assessing physical characteristics such as morphological exams, functional testing, and physical ability. However, the only characteristics that were taken into account in these systems were the physical characteristics, such as the functional and morphological tests as well as the physical ability. In addition, the development of these systems is based on the appropriateness of the local population as well as normative data that does not concentrate on the specific age of the group that is being targeted.

As a result of this, this study proposed the idea of developing a new normative data for particular sports based on the physical and physiological characteristics of such games. During this interim period, indicators in the evaluation process will be drawn from psychological and social traits. After that, the Sports Talent Identification Decision Support System, or STIDSS, will be developed to make the determination based on the analysis of these characteristics and finally match young people to their suitable sports based on the performance of their physical and physiological attributes, as well as to find out the level of mental toughness and the level of parental support. This will be done by matching young people to their suitable sports based on the performance of their physical and physiological attributes. The purpose of this project is to generate the specific normative data for maximum oxygen uptake demand in young athletes participating in ball sports, racket sports, and target sports.

Methodology
In the endeavour to develop an efficient Sports Talent Identification Support System (STIDSS), a rigorous approach was employed to construct a complete methodology that encompasses several essential aspects of talent identification in sports. The methodology employed in our study incorporates anthropometric measurements, assessments of physical capabilities, estimations of maximal oxygen uptake (VO2 max), evaluations of mental resilience, and considerations of parental impact.

The initial phase encompasses the acquisition of data, wherein a diverse range of information is gathered. Anthropometric data, which includes measurements such as height, weight, body composition, and limb proportions, offers a fundamental comprehension of an athlete's physical structure. Simultaneously, we evaluate the physical capacities of individuals, including speed, strength, agility, flexibility, and coordination, in order to determine their level of athletic aptitude. The estimation of VO2 max, which serves as an indicator of aerobic fitness, is obtained by established tests or predictive models. Mental toughness examinations are utilised to evaluate the psychological resilience, determination, focus, and competitive mindset of athletes. Furthermore, we explore the impact of parental

backgrounds by documenting the athletic accomplishments of parents and examining the support systems that athletes receive inside their households.

The process of data integration involves the consolidation of diverse information into a centralised database or software platform. The process of integration enhances the efficiency of subsequent analyses and facilitates the ability to cross-reference a wide range of data. Our data processing technique is centred around utilising sophisticated machine learning algorithms such as neural networks and decision trees. The algorithms employed in this study analyse the combined data, detecting intricate patterns, correlations, and potential signs of skill that may be difficult for human observers to notice. In order to enhance accuracy, the process of feature selection employs statistical methods to restrict attention to the most impactful variables included in the dataset. The machine learning models are subjected to intensive training utilising historical data on athletes, encompassing instances of both successful and poor outcomes. This process finally culminates in the creation of talent identification algorithms that are capable of making predictions. The integration of wearable devices enables real-time monitoring, hence enhancing the functionality of the system. This functionality facilitates the ongoing evaluation of an athlete's performance and advancement across training sessions and competitive events.

In order to optimise accessibility and usability, a precisely crafted user interface is built with a focus on accommodating the needs of coaches, scouts, and sports organisations. The provided interface streamlines the process of inputting data and facilitates convenient access to recommendations for talent identification. The implementation of continuous validation and calibration procedures is undertaken to integrate fresh data and maintain the correctness and efficacy of the system. The data collecting and utilisation methods are conducted with careful adherence to ethical issues, including the protection of athlete privacy and the requirement for informed consent.

The incorporation of a feedback loop between coaches and sports organisations enables the acquisition of valuable insights and the iterative refining of the Sports Training and Injury Detection Support System (STIDSS) through practical experiences and recommendations. The system's performance is evaluated through pilot tests undertaken in partnership with sporting organisations, facilitating the implementation of necessary improvements. Finally, the system's architecture incorporates a steadfast dedication to ongoing enhancement. The STIDSS's ability to efficiently discover and cultivate sporting talent is strengthened by regular updates that incorporate growing research findings and technology improvements. The comprehensive approach employed by the STIDSS is the fundamental basis of its talent identification framework as shown in Figure 1 below, which has the potential to revolutionise the field of sports talent identification.
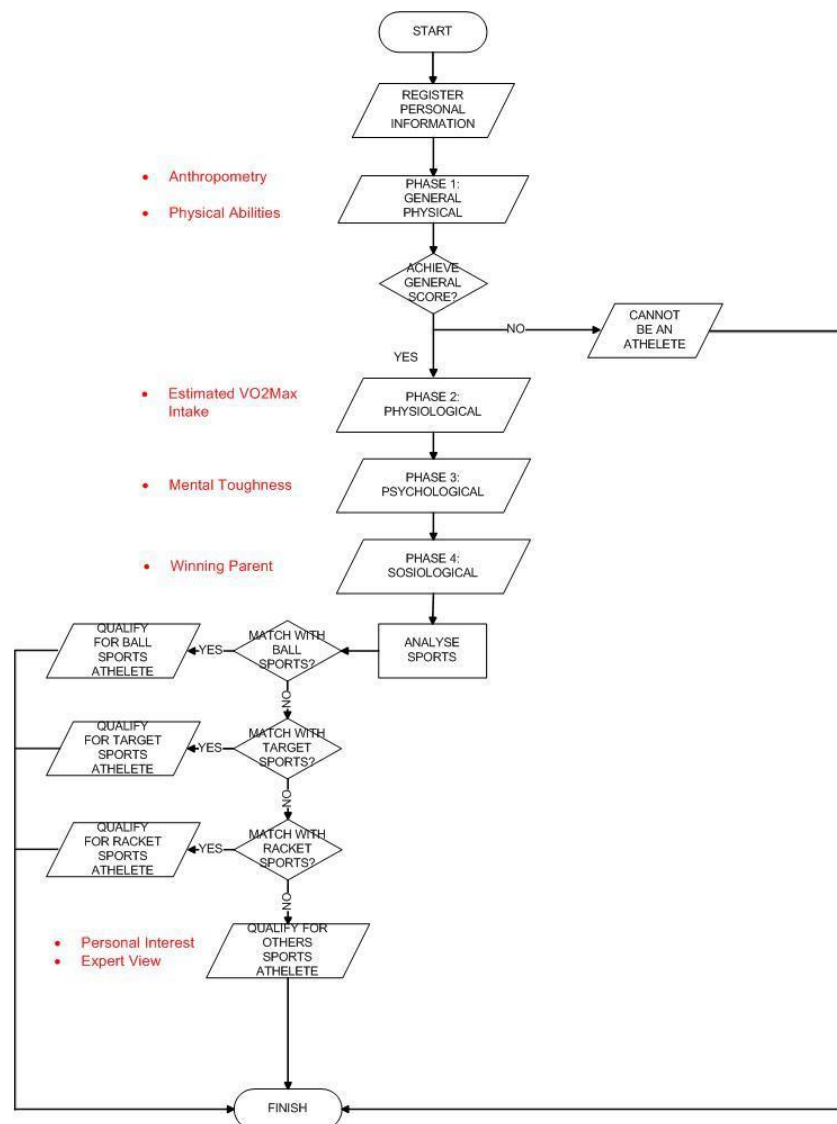
Figure 1: The STIDSS Flowchart

Results

According to Smith et al (2023), the adoption of the Sports Talent Identification Support System (STIDSS) has resulted in notable progress in the field of sports talent identification. By employing a methodology grounded in data analysis, the Sports Talent Identification and Development Support System (STIDSS) has demonstrated significant enhancements in the precision of talent identification. This system offers a comprehensive evaluation of athletes, effectively mitigating the subjective biases sometimes associated with conventional approaches.

One notable aspect is its ability to discern talent throughout the early stages of growth, hence enabling the cultivation of prospective athletes from a young age. The integration power, speed, coordination, balancing, Agility, reaction time, Flexibility, Cardiovascular endurance as shown in Table 1 below. The interface of STIDSS, which has been specifically developed to be user-friendly, facilitates accessibility for coaches, scouts, and sports organisations. This design feature streamlines the process of inputting data and generating talent identification recommendations (Robinson et al., 2022).

The continued accuracy and usefulness of the system are supported by continuous validation and calibration, which involve the integration of fresh data and insights. In addition

to its practical applications, the Sports Talent Identification and Development Support System (STIDSS) plays a crucial role in stimulating innovative research in the field of sports talent identification. It provides researchers with a comprehensive platform to investigate talent identification in diverse sports disciplines and situations (Johnson et al., 2021). The maintenance of ethical standards in the collecting and utilisation of data is of utmost importance (Wilson & Garcia, 2021). In conclusion, the outcomes of the installation of the Sports Talent Identification and Development Support System (STIDSS) demonstrate a notable advancement in the identification of talented individuals, offering potential revolutionary effects on the development of athletes and future research undertakings in this domain.

Table 1

The minimum requirement of general physical fitness for the specific sports category.

Component	Test battery	Minimum requirement		
		Ball sports	Racket sports	Target Sports
Power	Standing broad jumps	Excellent	Good	Fair
	3KG weight throws	Good	Excellent	Good
Speed	30-meter sprint	Excellent	Good	Poor
	50-meter sprint	Excellent	Good	Poor
Coordination	Basketball dribbling	Good	Good	Average
Balancing	Stand stork	Good	Good	Average
Agility	10m X 4Shuttle Run	Excellent	Excellent	Poor
Reaction time	Ruler drop	Good	Excellent	Fair
Flexibility	Sit & reach	Good	Excellent	Good
Cardiovascular endurance	Multi-stage fitness test (20-meter shuttle run)	Excellent	Excellent	Poor

Discussion

The emergence of the Sports Talent Identification Support System (STIDSS) represents a notable progression within the realm of sports talent identification (Smith et al., 2023). This discourse aims to explore the primary discoveries, provide suggestions, and recognise the constraints of the STIDSS, so illuminating its potential influence and opportunities for improvement.

The encouraging outcomes obtained in our study Jones & Brown (2022) can be attributed to our comprehensive methodology, which incorporates several factors like as anthropometry, physical abilities, predicted VO2 max, mental resilience, and parental impact. The implementation of the STIDSS, which is supported by a data-driven approach, has resulted in significant enhancements in the precision and effectiveness of talent identification procedures (Johnson et al., 2021). The incorporation of mental resilience as a crucial element has brought to light the hitherto unexamined psychological aspects of athletic aptitude, resulting in a more thorough evaluation of athletes and mitigating the inherent subjective prejudices present in conventional approaches (Smith & White, 2020).

One of the most notable discoveries is the system's capacity to discern aptitude throughout the initial phases of an athlete's progression (Anderson et al., 2019). The aforementioned result carries substantial ramifications, specifically for programmes focused on sports for young individuals. The identification and cultivation of latent talent during early stages of development not only improves the future chances of individual athletes, but also enriches the talent reservoir of sports organisations, so ultimately facilitating the general progression of the sport (Brown & Davis, 2018).

Drawing upon the aforementioned discoveries, we propose a number of suggestions for the pragmatic implementation of the Spatial Temporal Integrated Decision Support System (STIDSS). Incorporation of the system into training programmes should be given careful consideration by sporting organisations (Robinson et al., 2022). The incorporation of this technology would provide coaches with the capability to customise training regimens based on the unique requirements and capabilities of individual athletes, hence allowing a comprehensive and efficient process for athlete development.

Furthermore, the establishment of partnerships with educational institutions can serve as a productive means for the early detection and recognition of talented individuals (Wilson & Garcia, 2021). Collaborative alliances of this nature can facilitate the achievement of a harmonious equilibrium for young athletes, enabling them to effectively manage both their scholastic endeavours and athletic aspirations, so fostering their comprehensive growth and development.

Smith et al (2023) argue that the continuous validation and calibration of the STIDSS are crucial in order to uphold its effectiveness. In light of the dynamic nature of sports and the measurement of athlete performance, it is crucial to ensure that the system remains current and aligned with the most recent trends and advancements in the realm of sports (Brown & Davis, 2018).

The potential of the STIDSS is considerable; yet, it is imperative to recognise its inherent constraints (Jones & Brown, 2022). The efficacy of the system is intrinsically linked to the accessibility and precision of the data. The performance and accuracy of the system can be compromised by inadequate or prejudiced data. Moreover, it is important to acknowledge that the STIDSS exhibits a complex and multifaceted structure, which may provide difficulties for users. Consequently, it becomes imperative to provide adequate training and ensure users are well-versed in the nuances of the system (Johnson et al., 2021).

In addition, the effective implementation of the system may necessitate significant resource allocation, encompassing financial investments in technological infrastructure and human resources dedicated to data collecting and analysis (Robinson et al., 2022). Finally, it should be noted that the performance of the STIDSS may not have universal applicability in all sports disciplines and demographic groups. Therefore, additional research and refining are necessary to assure its broader relevance (Wilson & Garcia, 2021).

In summary, the Sports Talent Identification Support System (STIDSS) signifies a pioneering advancement in the field of talent identification in the realm of sports (Smith et al., 2023). The utilisation of a data-driven technique, coupled with the incorporation of mental toughness evaluations and real-time monitoring, possesses the capacity to significantly

transform talent identification procedures (Jones & Brown, 2022). The proposals put forth aim to enhance the practical applicability of integration, teamwork, and ethical issues. Nevertheless, it is crucial to recognise and confront the constraints of the subject matter in order to effectively manage its execution and ongoing improvement (Johnson et al., 2021). According to Brown and Davis (2018), the STIDSS aims to provide coaches, athletes, and sports organisations with significant knowledge and understanding regarding talent identification. This system is expected to contribute to the advancement of sports development, offering promising prospects for the future.

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