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DEVELOPING A TALENT SCOUTING INSTRUMENT FOR FENCING

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Article Info	Abstract
	This research aimed to know indicators that could be utilized to develop an instrument to scout talent for fencing that fulfilled the criteria of being valid, reliable, objective and effective. The phases of this research and development study included (1) reviewing the criteria of a good test, (2) analyzing the sport to be tested, (3) literature review, (4) selecting test items, (5) establishing procedures, (6) peer review, (7) pilot study, (8) determining validity, reliability, and objectivity, (9) developing norms, (10) constructing test manual. The development of an instrument to scout talent for fencing contributed to (1) shortening the period of time needed to provide high achievement by means of selecting prospective athletes, (2) eliminating work and energy as well as separating high talent for the coach, (3) increasing the competitivity and number of athletes in order to achieve higher performance, (4) enhancing the athletes' self-confidence, because the enhancement of athletes' achievement is significant compared those of athletes of the same ages without experiencing any selection process, (5) making it easier for the coach to apply the test model for talent scouting for fencing in the field.

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INTRODUCTION

One of the measures of success in sports development is the achievement in competitions. The Government through the State Ministry of Youth and Sports has made a Strategic Plan for the long-term development of sports. In the first phase, it was hoped that Indonesia was capable of becoming the best in the South-east Asia in the 2013 South East Asia Games. In the second phase, this country would be the tenth in rank in the 2015 Asian Games and the fifth in rank in the same event in 2024. Meanwhile, this country is expected to be the 15th in rank in the 2024 Olympic Games. In order to achieve such goals, it is necessary to implement some strategies. Among such strategies are (1) giving priority to supervise athletes of certain sports promising more medals, (2) individual sports prove more profitable. One of the individual sports prospectively providing more medals than others is fencing with 12 gold medals.

The failure of the Indonesian athletes in various international competitions was due to technical as well as non-technical factors. Among the technical factors were the coaching programs that had not been well arranged, training were only accidental instead of being continual, and they did not implement training methods which were based on sports science. The coaching was mainly carried out by implementing traditional models. The coaches trained their athletes the way they obtained from their predecessors. Moreover, they were just persons who used to be athletes without any relevant educational background. Among the non-technical factors was the inadequacy of fund and facilities needed for such training which has been a classic problem in the world of sports so far.

The advancement of science and technology has given broad impact on the development of coaching theories and methodologies. It is necessary to have comprehensive preparation and training sessions which are systematically programmed. Up till now, in order to prepare national fencing athletes, the Managing Committee of the Indonesia Fencing Federation (PB. IKASI) has centralized the recruitment of its athletes; they were then trained in training centers (PPLP) which are spread throughout Indonesia. There are 10 PPLP training about 150 athletes. Considering the number of Indonesia population, these centers have good opportunities to produce athletes in various sports. As a training and development forum, the Indonesia National Sports Committee has taken a number of steps in developing the national sports through (1) socialization (2) recruitment, (3) talent scouting, and (4) training system.

Related to the developmental phases, the success of such sports development in Indonesia is clear from the socialization. This success can be seen from the high percentage of the population who like doing sport. This is an indicator that sport has already been socialized. However, the practice in monitoring processes through talent scouting among youngsters still faces a number of such constraints as (1) the unavailability of adequate evaluation system, (2) the limitation of time to handle the enhancement of national sports achievement, (3) the continuity in the development process for achievement, and (4) limitation of fund. Early talent scouting is a problem that has to be timely solved so that athletes know the sports talent that they have. Talent scouting is often carried out by means of the coaches' observation and experience. Currently, in selecting prospective athletes the coaches make use of individual experiences. This method is not entirely wrong. However, it is not adequately accurate and is still substandard. Recently, a talent scouting was developed. It implemented a scientific method in the form of talent scouting test compiled by the Australia Sports Committee. The school is a source of very potentially prospective athletes. Therefore, it is appropriate if early talent scouting is centered at school. It is an alternative way of possessing potential athletes in the future. Sports programs for school students have long been put to practice in the form of extra-

curricular activities. Such programs are managed in a simple manner specifically focusing on a number of team works such as table tennis, kasti (children game similar to baseball), rounders, and football. Individual sports programs like gymnastics and athletics that have been well developed are of the school priority.

Physiologically, at the school age (10-15 year of age) there are increases in physical sizes including those of neurological system, body weight, body height, muscle mass, and cardiovascular organ sizes (Pate, 1984:341). When the child's neuron system is mature their harmony and movement control increase. This movement will in turn continually raise their new skill and competence. With such development and growth, the school students will be very potential to be recruited and trained optimally as potential athletes.

Based on the explanation, it can be inferred that the talent scouting program will be effective if it is implemented in long-term and continual manner. Talent scouting programs can be implemented in the available educational institution as well as sports clubs. Sport talent scouting program is a unique and innovative program which is implemented to help direct 11-15 year-old children or prospective athletes to develop and contribute to developing the concept of sport in the field of education and children's growth focusing on enjoyment, skill development, training quality, maximal participation, and leadership in the field of sport.

It can be inferred from the explanation above that it is necessary to identify prospective athletes as early as possible in order to yield promising athletes for the future. It is also interesting to study aspects of instrument development. It is this reason which encourages this study entitled "Developing a Talent Scouting Instrument for Fencing".

METHODOLOGY

This is a research and development study. Within it there are three major phases, i.e. (1) pre-development phase, (2) development phase,

and (3) model implementation. Bord and Gall (1983) state that research and development study basically aims to develop a product and test its effectiveness in achieving certain goals. The first goal is commonly called development function, the second being validation function. The procedures of research and development study consists of five steps, i.e. (1) conducting product analysis, (2) planning and developing initial product and expert validation, (3) try-out, (5) evaluation and product revision.

Within the initial product planning and developing phase, it is necessary to formulate the direction of instrument development for the fencing sport. The steps for the development are as follows. (1) reviewing criteria of good tests, (2) analyzing sport to be tested, (3) previewing literature, (4) selecting test items, (5) establishing procedures, (6) peer reviewing, (7) pilot study, (8) determining validity, reliability, objectivity, (9) developing norms and (10) constructing test manual (Morrow et al. 2011: 284-286)

The subject for the instrument try-out was the students of Public Junior High School 2 Karanganom Klaten, Al-Islam Junior High School Tempursari Klaten, and the Central Java fencing athletes.

RESULTS AND DISCUSSION

According to the Indonesia Fencing Association (IKASI) (2002: 1), fencing is referred to as "the art of self-defense using a sword". Fencing is a combination of motion, skill, art, and culture using a sword as its weapon. This type of sport emphasizes the skill of coordinating the sense of sight, hand and foot walk in order to do the motion of cutting, stabbing, and repelling the competitor's weapon implementing the skill of hand agility. According to Jacob and Kahar (1995: 8), "the basic technique of fencing consists of forward step, backward step, forward jumping, backward jumping, and attacking." Besides the basic technique, there is also a repelling technique. According to Elain Cheris, such technique consists of on guard, mobility, forward

movement, backward movement, jumping, stabbing, repelling, and changing of engagement areas. Meanwhile, according to Faidilah Kurniawan (1996: 50 – 61) the basic techniques of fencing cover the salute, guard/on guarded, step, advance, retreat, the lunge, footwork, parry, the disengagement.

In order to clearly understand the fencing profile it is necessary to pay attention to the components involved in this type of sport. The components of such sport among other things include (1) physical condition, (2) movement skill, basic techniques (Hidayatullah 2002). The physical condition includes speed, strength, endurance, agility, flexibility, reaction time, power, coordination, accuracy, and perception of motion.

Stability motions include bowing, stretching, rotating, swaying, body spinning, landing, stopping, avoiding, etc. The locomotive movements include walking, running, jumping, hoping, drifting, sliding, tiptoeing, climbing, etc. Manipulative movements include throwing, catching, kicking, volleying, trapping, attacking, bouncing, tossing, rolling, revolving, kicking, etc. The general motion skills resemble the basic motion skills because, within this phase, children make similar motions. The differences are the more complicated motions which are then approached using sporting skills applied in various activities leading to individual, double, and group sports.

Motion is the same as general motor skill, but the former stresses more on skill form and accuracy in practicing advanced lead-up games and sport. The components of basic techniques in fencing include all motion techniques available in fencing. In order to know the dominant elements of such game, it is necessary to observe fencing events really taking place in certain competitions. In this study, an observation was conducted during the XXVIII National Sports Games in Riau 11 – 19 September 2012 and the Asia Junior Championship 30 September – 8 October 2012. The results were as follows. Footwork = 74.26 %, Advance = 42.15 %, Retreat = 32.11%,

Attack = 8.78 %, Parry = 8.85 %, Disengagement = 8.11 %.

International sports championships such as international open in forms of either single or multi-events, Olympic game and the like have made it clear that the winners of such championships were those who fulfilled the standards determined by the relevant sports branches. This fact implies that besides anthropometric and psychological characteristics, technical as well as strategic competence and well-planned training programs are very much significant in helping achieve success. In order to become a world class athlete and gain gold medals in the Olympic game, it takes ten years time of training, 1,000 hours annually. It proves that gold age can only be achieved at early ages through talent scouting by means of long-term and systematic training process.

The research results concerning early age limit to start sports training in Germany can be used as a reference to start sports training.

1) The training program for Figure Skating and gymnastic, and diving starts at the age of 4 – 6 years and the next phase of the training starts at the age of 8 – 11 years and is continued until the age of 16. The golden age among woman's athletes in gymnastics is at the age of 13 – 15, while among man's athletes is at the age of 17 – 19.

2) For sport branches like sprints, throw, jump and sky jumping, which take strength, and competitive body contact games like fencing, boxing, and judo, training can start at the age of 17-22 years.

3) For sports requiring endurance like long-distance running, rowing, early training may start at the age of 10 – 12 years, the training program can then be continued at the age of 14 – 18 years, the golden age is 17 – 20 years. The training program for beginners starts at the age of 6, and the continual program is at the age of 8 – 13 years.

The early-childhood sports development is designed in pyramidal pattern of comprehensive sports training program in order to enhance the sports achievement in Indonesia.

Such development program contains the most effective methods, starting from socialization, recruitment, talent scouting, training, and specialization. Talent is an inborn potential ability that is used as the basis for real ability. Talent can be classified into 2, i.e. general and specific talents. General talent is a type of talent possessed by every human being; it includes intelligence. Specific talent is a type of talent possessed by a certain human being, but not by others. Meanwhile, sports talent is a basic skill related to motor performance.

Talent scouting (or sometimes called talent identification) is an effort systematically done in order to identify a person's potential in sports, predicting that that person will be successful in training and achieving the best performance (Cholic Mutahir, 2010). Another meaning of talent scouting is an effort done to predict with high probability that a person has very good opportunity in achievement sports so that he/she will be successful in participating in training programs to achieve the best performance (Menpora, 1999). The main objective of talent scouting is identifying and selecting potential athletes who are greatly interested in certain sport and predicting their opportunity to be successful in development programs so that they are able to achieve the best performance in certain sports events.

The earlier a child shows their interest in joining practices and ability to learn, the more successful he/she is in completing his/her training programs for beginners. As a result, he/she will have more time to practice before reaching the golden age of achievement and be positively influential in his/her practices. Therefore, it can be stated that talent determination is one of the processes in determining pre-conditional achievement, during which he/she shows their competence and is expected to reach better achievement when measured using appropriate diagnostic techniques.

Bloomefield, Ackland and Elliot (1994:268) state that talent can be identified in simple and sophisticated ways. For instance, a basketball coach recruits prospective players by means of merely considering their high physical posture while a swimming coach just observes the way a child stands up and pays attention to the soles. According to experiences, such elements are influential to the child's future achievement. On the other hand, sophisticated talent identification is oriented more on sport medical science implementing comprehensive test materials commonly used for recruiting prospective athletes.

Natural selection is a type of normal approach in developing certain sports talent. In this type of selection, it is considered that an athlete attends a certain sport as a result of local influences, for instance, school tradition, parents hope, or classmates. Therefore, the evolution of athletes' achievement is determined by natural selection depending on a number of factors. As a result, this type of natural selection approach oftentimes runs sluggishly. Scientific selection is a method of recruiting prospective athletes who possess particular potential to be developed. This type of selection method requires less time to reach high achievement compared to natural selection method. In order to recruit prospective athletes requiring certain standard posture tallness and weight, for example, basketball, volleyball, football, a number of throwing, and the like, scientific selection may be more appropriate. Similarly, sports requiring speed, rapid reaction, coordination, and power such as sprint, judo, various jump events, and so on. Such qualities can be detected by implementing scientific selection approach. This particular approach can also be used for recruiting prospective athletes to be directed to certain sports.

High achievement in sport requires specific biological profile identified through strong physical and psychological characteristics. It takes optimal practices employing optimal criteria to identify talent. Bompa (1990:335) points out several main criteria that can be used for talent identification, i.e. (1) health, (2) biometric quality, (3) talent, (4) sports facilities and season, and (5) expert availability.

Based on the preliminary study, theoretical study, and relevant research as stated above, the construction of talent test for fencing can be presented as follows.

Indicators that can be used for developing the instrument for talent scouting for fencing that is directed towards athletes' achievement in 2024 include: 1) anthropometric components covering (1) body height, (2) weight, (3) seat height, and (4) arm span, and 2) physical components including (1) coordination of hands, (2) strength of upper limbs, (3) explosive power of leg muscles,(4) agility, (5) running speed, (6) reaction speed, (7) kinesthetic perception, and (8) endurance.

1) Anthropometric components consist of

(1) Body height, i.e. the vertical distance from the floor to the vertex. Bogy height is an important factor in fencing (AUSSIE, 1993, Marina M et al. 2008: 28, Tsokalis C & Vaganas G. 2010, Kemenpora, 2013).

(2) Seat height is the vertical distance from the surface where the testee is seated to his/her vertex. This measurement includes the length of togo, leg, and head. The comparison between body height and seat height is related to the performance in a number of sports. In fencing, the leg should be longer than the togo (AUSIES 1993, Tsolakis C & Vaganas G. 2010, Kemenpora 3013).

(3) Body weight is closely related to fencing which requires light body capable of producing rapid and agile movement (AUSSIE. 1993, Marina .M et al., 2008: 28, Tsolakis C & Vaganas G. 2010, Kemenpora 3013).

(4) Arm span is the horizontal distance between the tip of the mid-finger and the arm stretched sideways as high as the shoulder. Arm span includes the width of the two shoulders and the length of the upper limbs. It is closely related to fencing because an athlete with long arms will be advantageous in the reach of stabbing target or competitor. Long arms can be identified from the wide stretch of the arms; it is very useful for the athlete's performance

(AUSSIE, 1993; Tsolakis C & Vaganas G. 2010; Kemenpora 3013).

2) Physical components include

(1) The coordination between legs, hands, and eyes which are closely related to performance in fencing. The harmony of footstep, sight sense, and the upper extremity limbs as the elements of motion in attacking and defending are very much needed in this particular game. In order to predict whether a person has a good coordinating ability, it takes a talent scouting test. The talent scouting test of such ability for fencing is tennis ball throw and catch with the purpose of measuring his/her coordinating ability in throwing and catching a tennis ball, i.e. throwing a tennis ball by swinging the underhand to the target and catching it using the other hand (AUSSIE. 1993, Bompa (1990: 339).

(2) Fencing may require high strength on the upper limbs. In order to predict whether a person has adequate strength on the upper part of his/her body it needs a talent scouting test. The appropriate test for fencing is basketball throwing test which is designed to measure the strength of the upper part of the body (AUSSIE. 1993).

(3) The explosive power of leg muscles is related to the performance of fencing, specifically in order to result in on guard. In order to predict whether a person possesses good extremity explosive power on the lower limbs it takes a talent scouting test. The appropriate talent scouting test of explosive power in fencing is stride jump test; fencing requires strength on the legs which is needed very much for measuring the endurance during competition. Stride jump test is a test which used to measure a person's ability to jump in a horizontal direction (AUSSIE. 1993; Marina. M. et al. 2008: 82; Kemenpora 3013).

(4) Besides using vertical jump, the explosive power of the leg muscles can be measured with stride jump (AUSSIE. 1993; Marina. M. et al. 2008: 82; Kemenpora 3013).

(5) Agility is an ability to rapidly change the body direction while moving. It is an

important component in fencing. In order to predict whether a person possesses good agility it takes a talent scouting test. The talent scouting test of agility for fencing is a test of running back and forth (AUSSIE. 1993).

(6)   Besides a test of the back and forth run, a test of 5m forward-backward run can also be used; in fencing, there is a rule for the fencing athletes to attack or defense by turning around (Marina. M. et al., 2008: 82).

(7)   The speed which is an ability to sprint starting from an idle position is needed in fencing. Speed is also important for several motions requiring short explosive activities with high intensity. In order to predict whether a person possesses good speed, it takes a talent scouting test. The talent scouting test for speed in fencing is in the form of 40m sprint test (AUSSIE, 1993).

(8)   Besides 40m sprint test, 14m sprint test is also important because in fencing it only takes the 14m sprint. In fencing, speed is very urgent specifically to measure the speed in forward attacking and rapid retreat defending during a competition. So, the appropriate test for this is 14m sprint test (Ma'mun et al., 2003:42).

(9)   Reaction speed in fencing is needed very much to see the athletes' ability to perform their reaction speed during competition

(Bompa, 1990: 339; Silliro, 2008: 89; Borysiuk, Cynarski, 2009; Ma'mun et al., 2003:44). In order to be able to predict whether a person possesses the ability of good reaction speed, it takes a talent scouting test. The appropriate test for reaction speed for fencing is hand reaction test (Widiastuti, 2015).

(10)   The kinesthetic reaction is an awareness of the body or parts of the body toward motion objects. In order to be able to predict whether a person has good kinesthetic perception, it takes a talent scouting test. The test for kinesthetic perception in fencing is kinesthetic perception test.

(11)   Aerobic fitness is an important component of fencing that is based on endurance. Fencing athletes should possess adequate aerobic fitness because they have to move for a long period of time during competition (Bompa, 1990: 339). In order to be able to predict whether a person possesses good endurance, it takes a talent scouting test. The test for the endurance of 13-15-year olds is man's 1000m sprint test and woman's 800m sprint test (Widiastuti, 2015).

(12)   Besides 800m and 1000m sprint tests, shuttle run and multistage fitness tests can also be used for testing aerobic fitness (Bompa, 1990: 339; Kemempora, 2013; AUSSIE, 1993).

Table .3.1 Selected Test Items

Variable	Y		p-value 0.05		significance
	Male	Female	Male	Female	
Kinesthetic perception (X5)	-0.647	-0.679	0.007	0.002	significant
Agility running back and forth 5 m (X6)	0.623	0.668	0.010	0.002	significant
Basketball power throwing (X9)	0.605	0.614	0.013	0.007	significant
Basketball Coordination throwing (X10)	0.653	0.646	0.006	0.004	significant
Power standing long jump (X11)	0.616	0.625	0.011	0.006	significant
Multistage Fitness Test (X16)	0.655	0.627	0.006	0.006	significant

The correlation test of variable Y yielded ry .5 of as high as -0.647 with the p-value (0.007) < 0.05. The inter-correlation coefficient with other variables showed very low correlation (p-value > 0.05). The result of stepwise regression test showed that the test items were selected and contributed significantly to Y. It can be inferred

that there is a significant correlation between X5 and Y for the significance level of 05 95%. In other words, Test item X5 fulfills the requirements as one of the test items (selected test item 1).

The correlation test with variable Y resulted in the correlation coefficient of as high

as -0.623 with the p-value (0.010) < 0.05. The stepwise regression test showed that this test item was selected as a test item which significantly contributed to Y, and the inter-correlation with other variables was low (p-value > 0.05) leading to the inference that test item X6 fulfilled the requirements as one of the test items (selected test item 2).

The result of correlation test with variable Y resulted in correlation coefficient of as high as 0.605, with p-value (0.013) < 0.05, and the stepwise regression test showed that this test item is selectable as a test item which significantly contributed to Y, and the low-level inter-correlation with other variables (p-value > 0.05) led to an inference that test item X9 fulfilled the requirements as one of the test items (selected test item 3).

The result of correlation test with variable Y resulted in correlation coefficient of as high as 0.653, with p-value (0.006) < 0.05, and the stepwise regression test showed that this test item is selectable as a test item which significantly contributed to Y, and the low-level inter-correlation with other variables (p-value > 0.05) led to an inference that test item X10 fulfilled the requirements as one of the test items (selected test item 4).

The result of correlation test with variable Y resulted in correlation coefficient of as high as 0.616, with p-value (0.011) < 0.05, and the stepwise regression test showed that this test item is selectable as a test item which significantly contributed to Y, and the low-level inter-correlation with other variables (p-value > 0.05) led to an inference that test item X11 fulfilled the requirements as one of the test items (selected test item 5).

The result of correlation test with variable Y resulted in correlation coefficient of as high as 0.655, with p-value (0.006) < 0.05, and the stepwise regression test showed that this test item is selectable as a test item which significantly contributed to Y, and the low-level inter-correlation with other variables (p-value > 0.05) led to an inference that test item X16 fulfilled the requirements as one of the test items (selected test item 6).

CONCLUSIONS

The results of data analysis resulted in a set of talent scouting test for man's fencing which consists of (1) kinesthetic perception test (r=0.683), (2) stride jump test (r=0.649), (3) (r=0.594, (4) (r=-0.676), (5) tennis ball throwing-catching test r=0.653), (6) test (r=0.63). Meanwhile, the talent scouting test for woman's fencing consists of (1) 5m forward-backward agility sprint test (r=-0.778), (2) basketball throwing test (r=0.710) ,(3) multi-phase test (r=0.700), (4) kinesthetic perception test (r=-0.733) (5) tennis ball throwing-catching test (r=0.724), (6) stride jump test (r=0.633).

The text step is writing a guide book completed with the application in order to facilitate its use in the field. It can be concluded that the developed talent scouting test for fencing is feasible and effective when it is applied for talent selection of young fencing athletes. It is suggested that further talent scouting test for young fencing athletes be further developed up to national level.

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