

# The Effect of Speed, Agility, Foot Coordination and Motivation to The Football Playing Skill

Ahmad Adil  
Universitas Negeri Makassar  
Makassar, Indonesia  
ahmad.adil342@yahoo.co.id

James Tangkudung  
Universitas Negeri Jakarta  
Jakarta, Indonesia

Achmad Sofyan Hanif  
Universitas Negeri Jakarta  
Jakarta, Indonesia

**Abstract**—This study used a survey method to see the influence between variables. The data analysis technique used path analysis to test the direct and indirect effects of speed, agility, coordination, and motivation on the skills of playing soccer of the students of the Faculty of Sports Sciences, Universitas Negeri Makassar. Path analysis technique with the assistance of the SPSS program version 20.00 had a significance level of  $\alpha = 0.05$ . The results of this study are as follows: (1) There is a positive influence of 0.612 between the speed on the skills of playing soccer and contributes of 37.4% (2) There is a positive influence of 0.862 between eye-foot coordination on the skills of playing soccer and contributes of 74.3% (3) There is a positive influence of 0.816 between motivation on the skills of playing soccer and contributes of 66.6% (4) There is a positive influence of 0.531 between speed on motivation and contributes of 28.2% (5) There is a positive influence of 0.621 between agility on motivation and contributes of 38.6% (6) There is a positive influence of 0.743 between eye-foot coordination on motivation and contributes of 55.1% (7) There is a positive influence of 0.824 between the speed on the skills of playing soccer through motivation and contributes of 66.8% (8) There is a positive influence of 0.879 between the agility to the skills of playing soccer through motivation and contributes of 67.3% (9) There is a positive influence of 1.344 between eye-foot coordination on the skills in playing soccer through motivation and contributes of 67.2%.

**Keywords**—*speed, agility, coordination, motivation, skills of playing soccer*

## I. INTRODUCTION

Nowadays, soccer is a popular sport in Indonesia. The fans of this sport are both male and female even the old people. This sport develops into a professional sport that guarantees the future of the player. The students of the Faculty of Sports Sciences of the Universitas Negeri Makassar have often participated in various competitions at both the regional and national levels, but the results have not been satisfactory, or they rarely won the tournament. However, in every National championship among students of the Soccer Club of the Faculty of Sports Sciences, Universitas Negeri Makassar always takes part or contributes the most players of all students in South Sulawesi. In soccer matches, it takes some techniques to play it such as dribbling, passing, stopping, throwing, heading, tricks and turns, and shooting. It is not wrong to practice this approach, but the problem in playing soccer is how the players are able to apply and develop the techniques of playing soccer such as dribbling, passing and kicking appropriately according to the playing situation and supported by optimal physical abilities such as speed,

agility, coordination and balance and high psychological factors such as motivation.

The skills of playing soccer must be supported by ball possession, control, deceptive ability, and speed changeability. If it is not supported by these factors, the skill cannot be done quickly so that the ball is easily possessed by the opponent. The structured or programmed regular exercise using the parts of the foot is better to improve the skills of playing soccer. Soccer performance is multifactorial and requires a range of physical qualities, including speed, endurance, agility, coordination, strength, balance, as well as perceptual and cognitive skills [1]. Skill is the consistent production of goal-oriented movements, which are learned and specific to the task [2]. Dribbling can be defined playing the ball while running, which can be done in a straight or twisted direction [3]. Dribbling the ball in soccer has the same function as basketball which allows maintaining the ball when running across the opponents or moves forward to the open space. Passing the ball in a soccer game is a game that prioritizes short operands or passing game. Therefore, a player must master the technique of baiting or passing the ball correctly [4]. In fact, they emphasized that the faster the ball goes, the less time the defenders and goalkeeper will have to block it [5].

Another skill in football is a speed which can be defined an ability to walk, run and move very quickly [6]. Furthermore, speed is the ability to perform similar movements in succession in the shortest possible time, or the ability to travel a distance in the shortest possible time [7]. One of aspect which must be noticed in football is agility. Agility is the ability to change directions rapidly when moving at a high rate of speed. Balance is the body's coordinated neuromuscular response to maintain a defined position of equilibrium in response to changing visual, tactile, or kinesthetic stimuli [8]. Agility and dynamic balance are crucial skills in prepubertal physical activity and sports participation, so the identification of efficient tests for their assessment is necessary. To evaluate the correlation between agility and dynamic balance in primary school children [9]. The last variable conducted on this study is student's motivation. Motivational learning activities can be interpreted as psychological energy with the abstract characteristic. Its form can be observed in the form of behavioral manifestations it displays. Motivation as a psychological process is a reflection of the strength of interactions between cognition, experience, and need [10].

The objectives of this study are: 1) The direct effect of speed on the skills of playing soccer. 2) The direct effect of eye-foot coordination on the skills of playing soccer 3) the

direct influence of motivation on the skills of playing soccer. 4) The direct effect of speed on motivation. 5) The direct effect of agility on motivation. 6) The direct effect of eye-foot coordination on motivation. 7) The direct effect of speed on the skills of playing soccer through. 8) The direct influence of agility on the skills of playing soccer through motivation. 9) The direct effect of eye-foot coordination on the skills of soccer playing through motivation.

## II. RESEARCH METHOD

The method is a way to obtain the truth through observation. According to Mukhtar, the research method is a logical, systematic, objective way to find scientific truth. The five variables in this study consist of four exogenous variables and one endogenous variable. Exogenous variables consisted of Speed ( $X_1$ ), Agility ( $X_2$ ), Eye-foot Coordination ( $X_3$ ), and Motivation ( $X_4$ ). The endogenous variable in this study is The Skills of Playing Soccer ( $Y$ ). This research was conducted at the Faculty of Sports Sciences (FIK) of Universitas Negeri Makassar (UNM), held from January 2017 to June 2017. This research was conducted by submitting an application to the Dean of FIK UNM Makassar for facility and field use and participation of the lecturers, and the samples involved in the study were the students of Physical Health and Recreation Education (PJKE) Department, Faculty of Sport Sciences (FIK) of Universitas Negeri Makassar (UNM), who had passed soccer courses. The total sample was 54 students.

The dribbling skill aspect was measured using the dribbling test which is the time score obtained by the testee in dribbling the ball from start to finish coupled with the score from the dribbling instrument prepared by the researchers and validated by the test expert team. Passing the Ball. The passing skill aspect was measured by the score or the number of balls entering the target successfully which was carried in 10 seconds. It was recorded as the final score. The testee was given a three-time chance, and the highest number was a score used as research data. The validation of this research instrument was in the form of face validity, namely the concept of a standard research instrument. Kicking the Ball. The kicking skill aspect was measured by a test of kicking the ball to the target coupled the time score obtained by the testee in kicking the ball from start to finish. The instrument of kicking the ball had been compiled by the researchers and validated by the expert team. The 60-meter running speed aimed to get a score by measuring the speed of a short distance run as fast as possible with a distance of 60 meters in the students of Faculty of Sports Sciences Physical (FIK) of Universitas Negeri Makassar (UNM).

The agility aspect was measured by using a stopwatch to measure the time to get a score. The testee moved at a distance of 18 meters and was given a two-time chance. The best result or score was taken as the research data. The scores were measured in second. In this study, the agility test aimed to find out one's agility. Eye-foot Coordination: The score was taken in 30 seconds coupled with the number of balls entering the target. The testee was given a three-time chance, and the highest number was a score used as research data. The validation of this research instrument was in the form of face validity Motivation is a physiological and psychological impulse influencing a person to achieve a goal driven through behavior and as a determinant of

success. The used test is a questionnaire with the aim to obtain a score or research results.

This power analysis technique included data analysis requirement test as a prerequisite of the use of analytical techniques and hypothesis testing technique. The data analysis requirement test included a normality test and data homogeneity test. The data normality test used the Lilliefors' formula. Data was declared normal if the value was  $L_0 < L_t$  at a significant level of 0.01. The data homogeneity test was intended to test the similarity of two population variances that were normally distributed. The data linearity and regression meaning tests were intended to side whether the obtained regression was truly linear and had a meaning when used to draw conclusions about the effects between several analyzed variables. Linearity test used the ANOVA table. Linear regression was stated to be very meaningful if the value of  $F_{count} < F_{table}$  at the level of  $\alpha = 0.05$ .

## III. DISCUSSION

Skills of Playing Soccer Variable ( $Y$ ) based on the data obtained in the field then analyzed statistically into the frequency distribution. The results of the study of data on the skills of playing soccer data consisting of 54 samples obtained the highest score of 71, the lowest score of 29, the range value of 42 and the total value of 2697. While the average value was 49.94, the standard deviation was 10.038, with the number of the class interval of 6 and the number of median scores was 49.50.

Speed Variable ( $X_1$ ) based on the data obtained in the field then processed statically into the frequency distribution. Then the results of the research on speed data ( $X_1$ ) of the students consisting of 54 samples obtained the highest score of 70, the lowest score of 27, the range value of 43 with the total value of 2699. Whereas the average value was 49.98 and the standard deviation was 9.963, the number of the class interval of 6, and the number of median scores of 48.00.

Agility variable ( $X_2$ ) from the data obtained in the field then processed statistically into a frequency distribution. The results of the research in the form of agility data ( $X_2$ ) of the students consisting of 54 samples obtained the highest score of 70, the lowest score of 33, and the range value of 37 with the total score of 2700. Whereas the average score was 50.00, the standard deviation was 10.030, the number of the class interval was 6, and the value or median score was 47.00.

Eye-foot coordination variable ( $X_3$ ) based on the data obtained in the field, then processed statistically into the frequency distribution. The results of this study presented eye-foot coordination data ( $X_3$ ) of the students consisting of 54 samples obtained the highest value of 68.31, the lowest score of 31 and the range value of 37 with a total value of 2699. The average value was 49.98, the standard deviation was 10.123, the number of the class interval was 6, and the number of the median scores was 49.00.

Motivation variable ( $X_4$ ) the data obtained in the field was then processed statistically into frequency distributions. The results of the study for motivation data consisting of 54 samples obtained the highest score of 62, the lowest score of 30, and the range value of 32 with a total value of 2696. The average value was 49.93, the standard deviation was 10.058,

the number of the class interval was 6, and the number of the median scores was 49.50.

The results of this first hypothesis study stated that the skills of playing soccer (Y) and speed ( $X_1$ ) produced a predictive model that multiple correlation coefficients (R) obtained a value of 0.612 after consulting with  $r_{table}$  on degree or level of freedom  $(n-1) 54-1 = 53$  with  $\alpha = 0.05$  of 0.266. The  $X_1$  variable towards the Y variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.374, which means 37.4% of the overall variation in the skills of playing soccer (Y) due to the existence of a multiple regression relationship with speed variable ( $X_1$ ). This means that 37.4% of the speed data ( $X_1$ ) had a direct influence on the skills of playing soccer (Y) and the rest was 62.6% or  $(100\% - 37.4\% = 62.6\%)$  caused by other factors not included in this study.

Based on the determination coefficient, it was also obtained the determination value of 0.374. This means that variations in the skills of playing soccer can be explained by variations in the speed of 37.4%. The findings in this study are in line with the theoretical study stated earlier that good speed will be able to show good achievement. The level of one's speed is really determined by several factors. The factors that influence the speed are heredity, reaction time, strength (ability to overcome ballast loads), technique, muscle elasticity concentration, and will [7]. The ability of speed is limited by factors such as muscle strength, muscle viscosity, reaction speed, contraction speed, coordination, and anthropometry characteristics. Thus, it can be said that the skills of playing soccer can increase when the players pay attention to the speed to improve the skills of playing soccer [11].

The results of the second hypothesis stated that the skills of playing soccer (Y) through eye-foot coordination ( $X_3$ ) produced a presumption model that multiple correlation coefficients (R) obtained a value of 0.862 after consulting with the value of  $r_{table}$  on degrees of freedom  $(n-1) 54 - 1 = 53$  with  $\alpha = 0.05$  of 0.266. The  $X_2$  variable to Y variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.743, which means 74.3% of the overall variation in the skills of playing soccer (Y) due to a multiple regression relationship on the eye-foot coordination variable ( $X_3$ ). This means that 74.3% of eye-foot coordination data ( $X_3$ ) had a direct influence on the skills of playing soccer (Y) and the rest was 25.7% or  $(100\% - 74.3\% = 25.7\%)$  caused by other factors not included in this study. The findings in this study are in accordance with the theoretical study stated earlier that the influence of good eye-foot coordination will be able to show good soccer playing skills. It can be said that the skills of playing soccer can increase when eye-foot coordination increases so that the skills of playing soccer will be higher [7].

The results of the third hypothesis study stated that the skill of playing soccer (Y) through motivation ( $X_4$ ) produced a presumption model that multiple coefficients (R) obtained a value of 0.816 after consulting with  $r_{table}$  on the degree of freedom  $(n-1) 50-1 = 59$  with  $\alpha = 0.05$  of 0.266. The  $X_4$  variable towards the Y variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a large value of 0.666 which means that 66.6% of the total variation in the skills of playing soccer (Y) due to multiple regression relationship on motivation variable ( $X_4$ ). This means that 66.6% of motivation data ( $X_4$ ) had a direct

influence on the skills of playing soccer (Y) and the rest was 33.4% or  $(100\% - 66.6\% = 33.4\%)$  caused by other factors not included in this study.

The findings of this study are in line with the theoretical study suggested earlier that the influence of good motivation is able to show good soccer playing skills. Motivation is a psychological state that directs or activates behavior, which can be categorized into intrinsic and extrinsic motivation; intrinsic motivation refers to doing an activity for the inherent satisfaction of the activity itself whereas extrinsic motivation refers to the performance of an action to achieve another end". Thus, it can be said that the skills of playing soccer can increase when motivation increases so that the skills to play soccer will be higher [12].

The results of the research on the fourth hypothesis stated that speed ( $X_1$ ) through motivation ( $X_4$ ) produced a predictive model, that multiple correlation coefficients (R) obtained a value of 0.531 after consulting with  $r_{table}$  on the degree of freedom  $(n-1) 54-1 = 53$   $\alpha = 0.05$  for 0.266. The  $X_1$  variable towards  $X_4$  variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.282 which means 28.2% of the total variation of motivation ( $X_5$ ) caused by a multiple regression relationship with speed variable ( $X_1$ ). This means that 28.2% of the speed data ( $X_1$ ) had a direct influence on the motivation of in the students ( $X_4$ ) and the rest was 71.8% or  $(100\% - 28.2\% = 71.8\%)$  caused by factors other factors not included in this study.

Based on the correlation coefficient, the determination coefficient of 0.282 was obtained so that the findings in this study indicated the importance of speed variable to increase the motivation of the students because it could explain the variations in the skills of playing soccer of 28.2%. This is in line with a theory which describes that motivation comes from the Latin "move" which means to move for example to say that motivation represents psychological processes that cause the arise, directed, and persistence of voluntary activities directed towards a specific goal [13].

The results of the research on the fifth hypothesis stated that agility ( $X_2$ ) through motivation ( $X_4$ ) produced a presumption model that multiple correlation coefficients (R) obtained a value of 0.702 after consulting with  $r_{table}$  on the degree of freedom  $(n-1) 54 - 1 = 53$  with  $\alpha = 0.05$  of 0.266. The  $X_2$  variable towards  $X_4$  variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.386, which means 38.6% of the total variation of motivation ( $X_4$ ) caused by multiple regression relationship with agility variable ( $X_2$ ). This means that 38.6% of agility data ( $X_2$ ) had a direct influence on the motivation of the students ( $X_4$ ) and the rest was 61.4% or  $(100\% - 38.6\% = 61.4\%)$  caused by other factors not included in this study. Based on the correlation coefficient, the determination coefficient was 0.386, so the findings in this study indicate the importance of the agility variable to increase the motivation of the students because it could explain the variation in the skills of playing soccer of 38.6%. This is in line with the theory which explains that motivation is an energy change within an arousal affective character and anticipatory goal reaction [14].

The results of research on the sixth hypothesis stated that

eye-foot coordination ( $X_3$ ) through motivation ( $X_4$ ) produced a predictive model, that multiple correlation coefficients ( $R$ ) obtained a value of 0.743 after consulting with  $r_{table}$  on degrees of freedom  $(n-1) 54-1 = 53$  with  $\alpha = 0.05$  of 0.266. The  $X_3$  variable towards  $X_4$  variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.551 which means 55.1% of the total variation of motivation ( $X_4$ ) caused by a multiple regression relationship with eye-foot coordination variable ( $X_3$ ). This means that 55.1% of eye-foot coordination data ( $X_3$ ) had a direct influence on the motivation of the students ( $X_4$ ) and the rest was 44.9% or  $(100\% - 55.1\% = 44.9\%)$  caused by other factors not included in this study.

Based on the correlation coefficient, the determination coefficient will be obtained at 0.551, so that the findings in this study showed the importance of eye-foot coordination variable in increasing the motivation of the students. Therefore, it could explain the variations in the skills of playing soccer of 55.1%. A skill or skill demands coordination. Coordination needed in skills includes eye-foot coordination and eye-hand coordination. Eye-foot coordination is needed in movements such as in the skill of kicking the ball, passing the ball [7].

The results of this study on the seventh hypothesis stated that the skills of playing soccer ( $Y$ ) and speed ( $X_1$ ) through motivation ( $X_4$ ) produce a presumption model that multiple correlation coefficients ( $R$ ) obtained a value of 0.817 after consulting with  $r_{table}$  on degrees or levels of freedom  $(n-1) 54 - 1 = 53$  with  $\alpha = 0.05$  of 0.266. The  $X_1$  variable to  $Y$  variable through  $X_4$  variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.668, which means 66.8% of the overall variation in the skills of playing soccer ( $Y$ ) due to the existence of multiple regression relationships with speed variable ( $X_1$ ) on the skills of playing soccer ( $Y$ ) through motivation ( $X_4$ ). This means that 66.8% of the speed data ( $X_1$ ) had a direct influence on the skills of playing soccer ( $Y$ ) through motivation ( $X_4$ ) and the rest was 33.2% or  $(100\% - 66.8\% = 33.2\%)$  caused by other factors not included in this study.

The findings in this study are in line with the theoretical study stated earlier that good speed and high motivation will be able to show good achievement as well. Motivation is a potential force that exists within a human being, which can be developed by him or developed by a number of outside forces which essentially revolve around monetary rewards and non-monetary rewards, which can affect their work positively or negatively, which depends on the situation and conditions faced by the person. Thus, it can be said that the skill of playing soccer can increase when the players pay attention to speed and motivation to improve the skills of playing soccer [15].

The results of the eighth hypothesis stated that the skills of playing soccer ( $Y$ ) and agility ( $X_2$ ) through motivation ( $X_4$ ) produced a presumption model that multiple correlation coefficients ( $R$ ) obtained a value of 0.821 after consulting  $r_{table}$  on degrees or levels of freedom  $(n-1) 54-1 = 53$  with  $\alpha = 0.05$  of 0.266. The  $X_2$  variable to  $Y$  variable through  $X_4$  variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.673 which means 67.3% of the overall variation in the skills of playing soccer ( $Y$ ) due to the existence of multiple regression relationship with agility variable ( $X_2$ ) on the

skills of playing soccer ( $Y$ ) through motivation ( $X_4$ ). This means that 67.3% of agility data ( $X_2$ ) had a direct influence on the skills of playing soccer ( $Y$ ) through motivation ( $X_4$ ) and the rest was 32.7% or  $(100\% - 67.3\% = 32.7\%)$  due to other factors not included in this study.

The findings in this study are in line with the theoretical study stated earlier that good agility and high motivation will be able to show good achievement. Agility carried out in matches shows that other motor elements that help when movement is carried out to achieve efficient movement, namely between the workings of the nervous system through the muscular control function that goes well will form and affect the agility and condition of the body so as to produce an efficient movement. Thus, it can be said that the skill of playing soccer can increase when the players pay attention to agility and motivation to improve the skills of playing soccer [7].

The results of the ninth hypothesis study stated that the skill of playing soccer ( $Y$ ) and eye-foot coordination ( $X_3$ ) through motivation ( $X_4$ ) produced a predictive model that multiple correlation coefficients ( $R$ ) obtained a value of 0.820 after consulting with  $r_{table}$  on degrees of freedom  $(n-1) 54 - 1 = 53$  with  $\alpha = 0.05$  of 0.266. The  $X_3$  variable to  $Y$  variable through  $X_4$  variable had a significantly positive correlation. *R Square* (determination coefficient) obtained a value of 0.672, which means 67.2% of the overall variation in the skills of playing soccer ( $Y$ ) due to the existence of multiple regression relationship with eye-foot coordination variable ( $X_3$ ) on the skills of playing soccer ( $Y$ ) through motivation ( $X_4$ ). This means that 67.2% of eye-foot coordination data ( $X_3$ ) had a direct influence on the skills of playing soccer ( $Y$ ) through motivation ( $X_4$ ) and the rest was 32.8% or  $(100\% - 67.2\% = 32.8\%)$  caused by other factors not included in this study.

Based on the terminated coefficient, also obtained the determination value of 0.672. This means that variations in the skill of playing soccer can be explained by variations in eye-foot coordination and motivation of 67.2%. The findings in this study are in line with the theoretical study stated earlier that good coordination and high motivation will be able to show good achievement. Motivation to learn is power motivation, diving force, or a tool to build willingness and a strong desire in students to learn actively, creatively, effectively, innovatively and fun in behavioral changes, both in cognitive, affective and psychomotor aspects [16]. Thus, it can be said that the skill of playing soccer can increase when the players pay attention to eye-foot coordination and motivation to improve the skills of playing soccer.

#### IV. CONCLUSION

The conclusion is based on research findings with exogenous variables consisting of Speed ( $X_1$ ), Agility ( $X_2$ ), Eye-foot Coordination ( $X_3$ ), and Motivation ( $X_4$ ). The endogenous variables consisted of the Skills of Playing Soccer ( $Y$ ). 1) There is a positive influence between speed ( $X_1$ ) on the skills of playing soccer ( $Y$ ) of the students. 2) There is a positive influence between eye-foot coordination ( $X_3$ ) on the skills of playing soccer ( $Y$ ) of the students. 3) There is a positive influence between motivation ( $X_5$ ) on the skills of playing soccer ( $Y$ ) of the students. 4) There is a positive influence between speed ( $X_1$ ) on motivation ( $X_5$ ) of the students. 5) There is a positive influence between agility

( $X_2$ ) on motivation ( $X_5$ ). 6) There is a positive influence between eye-foot coordination ( $X_3$ ) on motivation ( $X_5$ ). 7) There is a positive influence between speed ( $X_1$ ) on playing soccer skills (Y) through motivation ( $X_5$ ). 8) There is a positive influence between agility ( $X_2$ ) on the skills of playing soccer (Y) through motivation ( $X_5$ ). 9) There is a positive influence between eye-foot coordination ( $X_3$ ) on the skills of playing soccer (Y) through motivation ( $X_5$ ).

#### ACKNOWLEDGMENT

Deep gratitude is expressed to Head of Research Institute of Universitas Negeri Makassar for the assistance in order for the research to be well conducted. Thanks to Head of Faculty of Sports Science Universitas Negeri Makassar for the permission given to the researchers to conduct the research in the faculty.

#### REFERENCES

- [1] M. Zago, M. Giuriola, and C. Sforza, "Effects of a combined technique and agility program on youth soccer players' skills," *Int. J. Sports Sci. Coach.*, vol. 11, no. 5, pp. 710–720, 2016.
- [2] T. McMorris, *Acquisition and performance of sports skills*. John Wiley & Sons, 2014.
- [3] K. Thomas, D. French, and P. R. Hayes, "The effect of two plyometric training techniques on muscular power and agility in youth soccer players," *J. Strength Cond. Res.*, vol. 23, no. 1, pp. 332–335, 2009.
- [4] M. Beato, G. Coratella, and F. Schena, "Brief review of the state of art in futsal," *J. Sports Med. Phys. Fitness*, vol. 56, no. 4, pp. 428–432, 2016.
- [5] J. A. García, R. Menayo, and P. Del Val, "Speed-accuracy trade-off in a 7-meter throw in handball with real constraints: goalkeeper and the level of expertise," *J. Phys. Educ. Sport*, vol. 17, no. 3, pp. 1172–1176, 2017.
- [6] A. Ahmadi *et al.*, "Toward automatic activity classification and movement assessment during a sports training session," *IEEE Internet Things J.*, vol. 2, no. 1, pp. 23–32, 2015.
- [7] T. O. Bompa and C. Buzzichelli, *Periodization-: theory and methodology of training*. Human Kinetics, 2018.
- [8] T. Little and A. Williams, *Specificity of acceleration, maximum speed and agility in professional soccer players*. Routledge, 2003.
- [9] J. Calatayud, F. Martín, J. C. Colado, J. Benavent, M. C. Martínez, and J. Flández, "Relationship between the modified star excursion balance test and the 4x10 m shuttle run test in children.(Relación entre el star excursion balance test modificado y el 4x10 m shuttle run test en niños)," *CCD. Cult. 文化-科技-体育 doi 10.12800/ccd*, vol. 12, no. 35, pp. 111–116, 2017.
- [10] M. Metzler, *Instructional models in physical education*. Routledge, 2017.
- [11] R. L. Jones, C. Edwards, and I. A. T. Viotto Filho, "Activity theory, complexity and sports coaching: An epistemology for a discipline," *Sport. Educ. Soc.*, vol. 21, no. 2, pp. 200–216, 2016.
- [12] Y. Inoue, C. E. Wegner, J. S. Jordan, and D. C. Funk, "Relationships between self-determined motivation and developmental outcomes in sport-based positive youth development," *J. Appl. Sport Psychol.*, vol. 27, no. 4, pp. 371–383, 2015.
- [13] T. Delaney and T. Madigan, *The sociology of sports: An introduction*. McFarland, 2015.
- [14] S. Duchesne and A. McMaugh, *Educational psychology for learning and teaching*. Cengage AU, 2018.
- [15] R. Maguire, *Safety cases and safety reports: meaning, motivation and management*. CRC Press, 2017.
- [16] J. Nisbet and J. Shucksmith, *Learning strategies*. Routledge, 2017.