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Bio-motor profile development for senior Indian men soccer players

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Abstract
Many factors are important in determining the top performance of a soccer players or a team. Some of these factors are easily measurable such as running speed, aerobic endurance and jump capacities etc. Bio-motor abilities has been used for talent identification, for the purposes of understanding human physical variation, in motor conditions and in various attempts to correlate physical with racial and psychological traits. In order to answer these questions, the current study is being carried out. Selected variables for the study were Speed, Agility, Reaction Time, Explosive Power, Upper and Lower body strength. The profile is developed on t-scale for senior Indian women soccer players and could be used for assessing the ideal bio-motor of other players.

Keywords: SAQ, plyometric training, strength training and soccer

Introduction
Today, sports bring people, teams, and nations together on an equal playing field. Most games include sports, which encourages participation, spectators, and media attention. Mega sports events are broadcast on TV and other media. Football is the most popular game for players and spectators. Soccer, often known as football, is played by two teams of 11 players. The side with more goals in the end wins. If the game ends in a draw, it moves into extra time or a penalty shootout, depending on the tournament. It is played worldwide by billions of fans. From 1307 through 1327, King Edward of England established laws that imprisoned football players. 240 million individuals worldwide play the game presently. Every country plays football. Association football (soccer) is the most popular. The game expanded throughout Europe and then to South America and other continents. FIFA (Fédération International de Football Association) was founded in 1904 and participated in the 1908 Olympics. UK won the inaugural Olympic football final, beating Denmark 2-0, popularizing the game. (Tanner, 1976)
Soccer players have to adapt to the physical demands of the game, which are multifactorial. Players may not need to have an extraordinary capacity within any of the areas of physical performance. Some of these factors are easily measurable such as running speed and aerobic or jump capacities. (M Susana Gil *et al*., 2007)
When playing any sport, the bio-motor skills that are stressed-such as quickness, endurance, flexibility, and coordination-take center stage. It is considered to be a persistent effort in a range of settings that results in an effective performance in such fundamental demands as running, leaping, sleeping, etc. As a result, the last standard by which all other aspects of physical fitness or overall fitness are observed and assessed in males is motor fitness. Sports people must routinely engage in general, particular, and competitive exercise programmes that are unique to a sport in order to enhance their bio-motor talents, which vary from sport to sport. For instance, strength is produced when a sportsperson works against opposition, such as their own body, a partner's resistance, a medicine ball and a barbell, etc. Each athlete has a distinct profile when it comes to their various Bio-motor skills. Given the tight association between skill performances and performance in terms of distinct motor skills, a coach must be aware of both how to train for these abilities as well as how to assess them using various evaluation techniques. Only very gifted athletes are likely to have all of the necessary bio-motor skills to perform well. (Book Walter, 1953; Uppal, 2013) [4].

Sports Profiling
Sports profiling is now regarded as a crucial component in the development of the self-awareness needed by the coach of a professional athlete or sportsperson.

The information gathered through sports profiling allows one to create their optimal bio-motor and learn how their own performance is influenced by their bio movement. With the use of sports profiling, anybody may improve their performance to a much better level, regardless of current level. Sports and games have evolved through time to become more difficult and complex, but they have also gotten more rewarding. The presence of skilled and resourceful coaches allows athletes to perform at a far greater level than they were able to before, allowing them to smash performance records. The technical requirements of any associated sport are required of great trainers.(Verma J P, 2013) [5] The study's main aim was to develop a profile on selected Bio-motor variables for selected Indian men soccer players.

Selection of Subjects

In order to achieve the aim of study, one sixty (N=120) Indian senior soccer player were selected. The subject's age ranged from 18 to 25 years old.

Selection of Bio-motor Variables

The Bio-motor Variables selected for this research study were- Speed Strength of Upper Body, Strength of Lower Body, Explosive Power, Agility and Reaction Time.

Data Collection

Table 1: Bio-motor variables and their criterion measures

Variables	Test	Test-re-test Reliability (r)
Speed	30-meter flying Start Test	0.92
Strength of Upper Body	Bench Press1 RM Test	0.88
Strength of Lower Body	Squat 1 RM Test	0.90
Explosive Power	Standing Broad jump	0.90
Agility	Shuttle Run Test	0.86
Reaction Time	Nelson Foot Reaction Time Test	0.92

The data was collected on the variables in table no. 1 for the selected soccer players. The measuring tool/ test used for measuring Bio-motor variables were highly reliable "r" and valid.

Administration of Test

(a) Speed

Purpose: To measure the speed (30 m dash)
Equipment: Whistle, chalk powder, stop watch
Procedure: The subjects was asked to take position behind the starting line. At the command of go the timers was switched on their respective stopwatches. As soon as the subjects crossed the finishing line, the respective timers had switch off their stopwatches and time was recorded up to .01 second.

(b) Agility

Purpose: To measure theability to change direction quickly.
Equipment: marker cones, measurement tape, stopwatch (timing gates optional) non-slip surface.
Procedure: This test requires the subject to run back and forth between two parallel lines as fast as possible. Set up two lines 30 feet apart. Starting at one line, on the signal "Ready? Go!" the participant runs to the opposite line, the foot and hand simultaneously touching the ground on or beyond the line, then back to the start/finish line to touch the ground again, turning to sprint back to the line 30 feet away and touching the ground, then sprinting back across the start/finish line to complete the test. A total of 120 ft (40 yards) is covered. Perform two trials with one minute rest between each.

Scoring: The best time from two trails is recorded. Results are recorded to the nearest tenth of a second.

(c) Reaction Time

Purpose: To measure the foot reaction time of the subjects.
Equipment: Nelson Reaction Time Scale, Table or Bench and Wall Space.
Procedure: The subjects were asked to sit on a table which was about one inch away from the wall with his shoe off. The subject positioned his with the base line of the times opposite to the end of the beg toe. The subjects were also asked to look at the concentration zone and to react as soon as the time stick with foot so that the ball of the foot was held about one inch from the wall with the heel resting on the table top about two inches from the table edge. The tester held the reaction time stick near the wall so that it hangs between the wall and subjects' foot bedropped by pressing the times stick against the wall with the ball of the subjectfoot.

Scoring: The reaction time of each trial was recorded from the line just above the end of the big toe when the foot pressed the stick to the wall. Out of 20 trials the average of the middle ten trials ignoring the five fastest and five slowest trials was taken as the score of this test. To get the reaction time following formula was computed independently.

Reaction time (Sec.) = 2 * Distance the stick timer falls (in Feet) *32 (Acceleration due to Gravity)

(d) Strength of Upper Body

Purpose: To measure maximum strength of the chest muscle groups.
Equipment: Bench with safety, bar and various free weights.
Procedure: The subject should perform an adequate warm up. An example would be to warm up with 5-10 reps of a light-to-moderate weight, then after a minute rest perform two heavier warm-up sets of 2-5 reps, with a two-minute rest between sets. The subject should then rest two to four minutes, then perform the one-rep-max attempt with proper technique. If the lift is successful, rest for another two to four minutes and increase the load 5-10%, and attempt another lift. If the subject fails to perform the lift with correct technique, rest two to four minutes and attempt a weight 2.5-5% lower. Keep increasing and decreasing the weight until a maximum left is performed. Selection of the starting weight is crucial so that the maximum lift is completed within approximately five attempts after the warm-up sets.

Scoring: The maximum weight lifted is recorded.

(e) Strength of Lower Body

Purpose: To measure lower body maximum strength.
Equipment: Various free weights and a barbell.
Procedure: After an adequate warm up, the subject stands under the bar, with feet shoulder-width apart. The knees should be in line with the toes. Take the weight on your shoulders, then bend at the knees and hips to lower the body. Ensure the head and neck are in a neutral position with eyes facing forward (avoid rounding of the spine). Lower the body

until the knees are at a right angle, then push back up to a standing position. Move in a slow, smooth and continuous movement.

Scoring: The maximum weight lifted is recorded.

(f) Explosive Power

Purpose: To measure the explosive power of the legs

Equipment: tape measure to measure distance jumped, non-slip floor for take off, and soft-landing area preferred.

Procedure: The subject stood behind a line marked on the ground with feet slightly apart. A two-foot take-off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backwards. Three attempts are allowed.

Scoring: The measurement is taken from take-off line to the nearest point of contact on the landing (back of the heels). Record the longest distance jumped, the best of three attempts.

Result

Statistical Analysis

Descriptive statistics like minimum score, maximum score, mean and Standard deviation were analyzed for all the parameters in Table 2. Minimum and maximum scores were converted into its standard scores by using the following transformation: - $Z = \frac{(x-\mu)}{\sigma}$ Z values were converted into its linear transformed scores by using the transformation Z = 50 + 10 x Z. this way negative value of Z scores can be converted into positive scores.(Verma J P, 2013) [5].

Table 2: Descriptive statistics of Bio-Motor Variables

Bio-Motor Variables	Min	Max	Mean	Std. Deviation
Speed	4.04	6.99	4.7562	.59462
Agility	8.01	11.47	10.0548	.80266
Strength of Upper Body	40.00	130.00	75.9042	23.83480
Strength of Lower Body	60.00	150.00	87.2500	18.59396
Explosive Power	211.00	265.00	239.3500	17.42579
Reaction Time	.87	1.50	.9994	.17731

Table No. 2. is graphically representing the minimum, maximum, mean and standard deviation of selected bio-motor variable of selected soccer players.

The minimum and maximum speed were 4.04 sec and 6.99 sec, respectively. The mean and standard deviation for speed were 4.75 sec and 0.59 sec. The minimum and maximum Agility were 8.01 sec and 11.47 sec, respectively. The mean and standard deviation for Agility were 10.05 sec and 0.80 sec. The minimum and maximum Strength of Upper Body were 40 kg and 130 kg, respectively. The mean and standard deviation for Strength of Upper Body were 75.9 kg and 23.89 kg. The minimum and maximum Strength of Lower Body were 60 kg and 150 kg, respectively. The mean and standard deviation for Strength of Lower Body were 87.25 kg and 18.59 kg. The minimum and maximum explosive power were 211 cm and 265 cm, respectively. The mean and standard deviation for explosive power were 239.35 cm sec and 17.42 cm. The minimum and maximum Reaction Time were 0.87 sec and 1.50 sec, respectively. The mean and standard deviation for Reaction Time were 0.99 sec and 0.17 sec.

Table 3: Standard score of minimum, maximum and average of all the variables

Variables	Minimum(Z)	Mean(Z)	Maximum(Z)
Speed	-1.20441	0	3.75675
Strength of Upper Body	-2.54757	0	1.76310
Strength of Lower Body	-1.50638	0	2.26962
Explosive Power	-1.46553	0	3.37475
Agility	-1.62690	0	1.47196
Reaction Time	-.72989	0	2.82320

Table 4: Transformed standard score of minimum, maximum and average of all the variables

Variables	Minimum	Mean	Maximum
Speed	37.9559	50	87.5675
Strength of Upper Body	24.5243	50	67.631
Strength of Lower Body	34.9362	50	72.6962
Explosive Power	35.3447	50	83.7475
Agility	33.731	50	64.7196
Reaction Time	42.7011	50	78.232

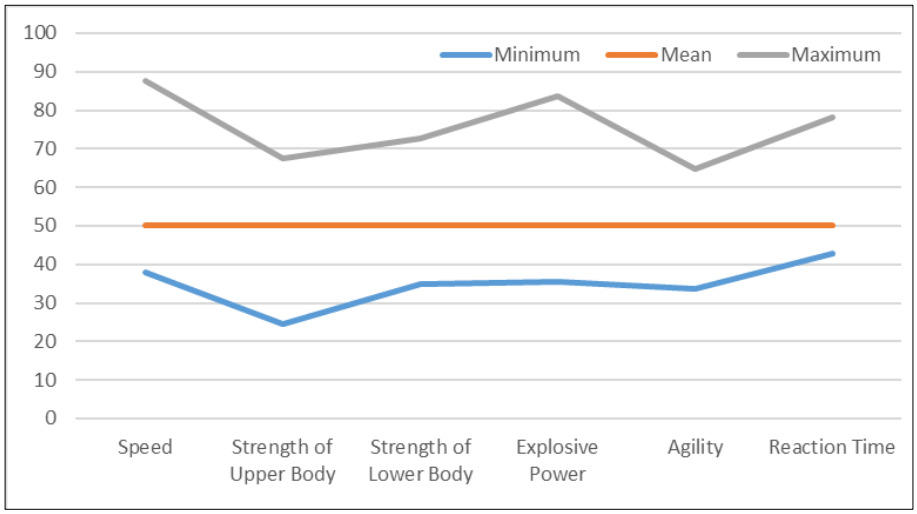

Fig 1: Profile chart of selected variables of bio-motor variable

Developing Profile

The descriptive statistics (mean, standard deviation, and range) of a few chosen bio-motor variables are shown in Table 2. After descriptive statistics have been calculated, Table 3 shows the converted, standardised z-scores for the mean, maximum, and minimum values. Z-scores were

determined using the method Z=(X-MEAN)/S.D. Standardized scores were transformed into a T-scale (Z=50+10*Z) for the purpose of comparing various factors (Table:-4) The graphical range of a chosen bio-motor characteristic is shown in Figure 3. It is necessary to have the profile data for these chosen bio-motor variables in order to evaluate the effectiveness of any soccer player. After acquiring the data for the various variables, the raw score should be divided by the standard deviation to generate the standard score (z). Now, the calculated z-score is transformed into a t-scale for comparison and player selection.

Conclusion

The selected research study focused on developing profile on bio-motor variables for selected senior men soccer players on t-scale. The developed profile can be used to assess the bio-motor variable of men soccer players to determine whether, a player posses the required Speed Strength of Upper Body, Strength of Lower Body, Explosive Power, Agility and Reaction Time.

References

1. Baechle TR, Earle RW, editors. Essentials of strength training and conditioning. Human kinetics; c2008.
2. Moreno E. High school corner: Developing quickness, part II. Strength & Conditioning Journal. 1995 Feb 1;17(1):38-9.
3. De Garay AL, Levine L, Carter JL, Montoye HJ. Genetic and anthropological studies of Olympic athletes. LWW; 1975 Jul 1.
4. Uppal AK. Science of sports training. Friends Publications (India); c2013.
5. Verma JP. Data analysis in management with SPSS software. Springer Science & Business Media; c2012 Dec 13.