Correlation of Reaction Time and Speed of Basketball Players

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Abstract

The aim of this study was to determine the relationship between reaction time (auditory & visual) and speed (20 meter sprint time) in male Basketball players. A total of 45 male Basketball players with an average age of 20 to 25, height of 175 ± 5.79 cm and weight of 72.27 ± 4.52 kg, respectively, volunteered to participate in this study. Each subject's reaction time and speed were measured, and the data analyzed using Pearson's correlation and paired t tests. There were no meaningful correlations between reaction time and speed in the subjects. However, their auditory reaction times were significantly better than their visual reaction times, and there was a negative correlation between body weight and speed ($p < 0.01$).

KEYWORDS: Reaction time, Basketball, Speed

Introduction-

Reaction time is the recess between the onset of a boost and the initiation of a development reaction (Magill 1998). The reaction time for a visual jolt is around 250 ms and for a sound-related boost is around 170ms (Magill 1998). Reaction time can be further separated into three sections. The initial segment is recognition time - the ideal opportunity for the application and view of the boost and giving the basic response to it. The second part is choice time, which means the ideal opportunity for giving a reasonable reaction to the boost. The third part is engine time, which is the ideal opportunity for consistence to the request got (Tripo 1965). Vocalist et al. (1993) characterized reaction time as being made out of four phases, in particular: the begin of eye developments, eye development time, choice time and muscle constriction time. Reaction time is influenced by different elements, for example, age, sex, number of concurrent boosts, nourishment, physical movement, preparing and physical wellness and weakness (Morehouse and Mill operator 1976 and Spirdiso 1975). The competitors have preferred reaction times over non-competitors (Moka et al. 1992).Reaction time is a vital calculate influencing achievement many wearing rivalries. The reaction times of competitors in various games and even in similar games yet playing in various positions demonstrate varieties (Moka et al. 1992). The reaction times of elite sprinters were observed to be shorter than those of low execution sprinters. Practice incites excitement that underpins sharpness to outside ecological boosts in exceedingly prepared competitors (Mouelhi et al. 2006). Hazardous power, together with reaction time, chooses the consequences of rivalries in the initial 2–3 meters (Akgün 1996). Since Ball requires 1–3-second hazardous sprints, the significance of this trademark turns out to be a great deal more clear in the execution of players. Look into has demonstrated that speed can be upgraded by fortifying the muscles (Akgün 1996). A standout amongst the most critical biomotor capacities required in games is speed, or ability to travel or move rapidly. From a mechanical perspective, speed is communicated through a proportion amongst space and time. The term speed

joins three components: (i) reaction time; (ii) recurrence of development per time unit and (iii) speed of go over a given separation (Bompa 1994). Investigate Ponders have uncovered that response time is autonomous of speed (Paradis et al. 2004 what's more, Yakut 2004). In spite of the fact that it is likewise realized that physical preparing effectsly affects both reaction time (Davranche et al. 2006) and speed (Little and Williams 2005), the relationship between reaction time and speed has not been widely explored in the writing. The point of this review was, thusly, to watch the relationship between reaction time (sound-related and visual) and speed (20 meter sprint time) in male B-ball players.

Methodology:

The subjects in this prsent study were 45 male Basketball players from University teams Last 5 years of SGBAU Amravati. Data were gathered in the Sports Physiology research center of department of physical education SGBAU, Amravati, Maharashtra. The body statures and weights of the subjects were measured with anthropometric bar and spring based measure standard machine. The 20-meter speed test was done in the field and visual and auditory-related reaction times were measured utilizing the auditory and visual reaction time instrument.

Statistical Analysis:

Data were statistically evaluated with the paired *t* test and Pearson's test using SPSS version 10.0 for Windows. Significance was set at the $p < 0.05$ level.

Table 1

Variables	**Mean**
Age	20 to 25
Body Height	175 ± 5.79
Body Weight	72.27 ±4.52
Visual Right Hand of the Reaction Time	225.37
Visual Left Hand of the Reaction Time	224.63
Auditory Right Hand of the Reaction Time	189.13
Auditory Right Hand of the Reaction Time	192.70
Sprint	5.10 ± 0.65

There were significant differences between the auditory and visual reaction times of both the right and left hands ($p < 0.01$). The visual reaction time of the right hand, visual reaction time of the left hand, auditory reaction time of the right hand, and auditory reaction time of the left hand were 225.37 ms, 224.63 ms, 189.13 ms, and 192.70 ms, respectively. There were no significant relationships between the reaction time and 13 speed of the subjects (Table 2). However, there was a negative relationship between the body weights and sprint values of the Basketball players ($p < 0.01$). In other words, the greater the body weight, the shorter the 20-meter sprint time. Moreover, there was a statistically significant positive relationship between the auditory and visual reaction times ($p < 0.01$) of the players.

Table 2 Correlation (Pearson's) among the parameters in the male Basketball players

Body height

	Body height	**VRTRH**	**VRTLH**	**ARTRH**	**ARTLH**
Body height	0.405**				

VRTRH	-0.063				
VRTLH	0.119	0.604**			
ARTRH	0.085	0.463**	0.547**		
ARTLH	-0.036	0.479**	0.546**	0.650**	
Sprint	-0.311**	0.034	-0.007	0.020	-0.147

*VRTRH- Visual reaction time right hand, VRTLH- Visual reaction time left hand, ARTRH- auditory reaction time right hand, ARTLH- auditory reaction time left hand, **$p < 0.01$; *$p < 0.05$.*

Discussion:

Reaction time and speed factors have been utilized as a part of the assessment of the motor skill abilities of players for a significant time. In spite of the fact that reaction time is a measure of execution, analysts normally utilize it to assess motor skill abilities (Magill 1998). The privilege and left hand auditory (ARTRH, ARTLH) and visual (VRTRH, VRTLH) reaction times of the male Basketball players who taken an interest in this review inspecting the relationship between reaction times and speed were 189.13ms, 192.70ms, 225.37ms, and 224.63ms, separately. Imamog˘lu et al. (2000) found the auditory-related and visual reaction times of expert basketball players to be160.0 ± 19.0 ms and 175.0 ± 14.0 ms, individually, and of beginner basketball players to be 163.0±20.0 and 177.0± 18.0 ms, individually. Hasçelik et al. (1989) found the visual reaction times of volleyball players before a preparation program to be 214.55ms and 200.0 ms, separately, and after a preparing project to be 191.3 ms and 175.05 ms, individually. Ziyagil et al. (1994), in their review of wrestlers, decided the privilege and left hand sound-related reaction times to be (1/100 s) 17.46 ± 1.46 and 16.87 ± 1.12, individually, and the privilege and left hand visual reaction times to be (1/100 s) 17.38 ± 1.85 and 17.84 ± 1.27, separately. Erog˘lu and Senel (2002) found the 14 taking after mean reaction times in their investigation of wrestlers: ARTRH of 182.09 ms, ARTLH of 179.54ms, VRTRH of 206.09ms, and VRTLH of 212.91ms. The reaction times acquired in the current review are in great consistence with the qualities detailed in these past reviews. Imamog˘lu et al. (2000) announced the 20-meter sprint estimations of expert and beginner basketball players as 2.95±0.17 s and 3.07±0.27 s, individually. The 20-meter sprint estimations of basketball players at various levels from different reviews are as per the following: Eniseler et al. (1996) revealed estimations of 2.86 ± 0.10 s for chief group soccer players, 2.89 ± 0.07 s for second association soccer players, 2.94 ± 0.07 s for division 3 players, and 2.96 ± 0.08 s for beginner soccer players. Ziyagil et al. (1997) revealed estimations of 2.99 ± 0.1 s for expert basketball players, and 3.24 ± 0.11 s for hold cooperative people. Alpay (1999) announced estimations of 2.84 ± 0.9 s for proficient basketball players, and 2.97 ± 0.1 s for beginner basketball players. Çebi (1999) announced estimations of 3.01 ± 0.1 s for expert soccer players, and 3.24 ± 0.1 s for beginner soccer players. The mean 20-meter sprint consequence of 5.08 ± 0.55 s got in this review is in great concordance with the above already detailed qualities.

Table 2 shows that there was a negative correlation between body height and sprint speed of the Basketball players ($p < 0.01$). In other words, the greater the body height, the higher the 20- meter sprint time. There was a statistically significant positive correlation between the auditory and visual reaction times ($p < 0.01$). The decrease in the visual reaction times of the subjects is accompanied by a decrease in their auditory reaction times. The auditory reaction times of the subjects were significantly shorter than their

visual reaction times ($p < 0.01$). This is also supported by data in the literature (Teichner 1954). In the present study, no significant correlation was observed between reaction time and sprint speed. Paradis et al. (2004), in their study of 209 male and female athletes who competed in the Greek, Balkan and European indoor championships in 2002, determined that there was no significant correlation between reaction times and the 60m, 60m hurdles and 200 m race results. Reaction time cannot be an indication of action time performance since these two variables represent different components of performance. In other words, reaction time and action time are not dependent on each other (Yakut 2004). The most important characteristic of reaction and action times is that they are independent measures. This signifies that the correlation between reaction time and action time is typically low. Thus, one cannot use reaction time to determine or predict action time. Magill (1998) stated that reaction time and action time were independent of each other; he studied 402 subjects between 8 and 30 years of age and found almost zero correlation between reaction time and action time. Action time can be improved by appropriate training. It is known that regular training also has a positive effect on reaction time. Although these two factors are independent of each other, they can both be improved by common strategies such as suitable physical training (Lemmink & Visscher 2005; Montes-Mico et al. 2000). Linford et al. (2006) reported that a 6-week training program significantly reduced reaction time of the peroneus longus muscle in healthy subjects. The fact that the subjects in this study had similar performance levels may have resulted in the lack of a significant correlation between reaction times (audio & visual) and sprint times.

Conclusion-

No significant correlation relationship was found between the audio and visual reaction times what's more, the speed of the basketball players who partook in this present study. Be that as it may, there was a negative relationship between the body height and sprint times of the basketball players. In expansion, there were significant contrasts between the audio and visual reaction times of the subjects.

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