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Analysis of Handedness on the Visual Reaction Time in Male Handball Players

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Abstract

The purpose of the study was to analysis right and left handed handball players on visual reaction time. Sixty (60) male university handball players were selected and divided into two groups (30) thirty in each. They were classified into right and left handed handball players. These players were selected from Annamalai University, Periyar University, Pune University and Shivaji University. The subjects age range between 20 to 24 years were selected. Visual reaction time was selected as criterion variables. Visual reaction time was measured on both right and left handed handball players with Chronometer. 't' test was used to compare the mean differences between the two groups which showed that there was a significant difference existing between left and right handed handball players on visual reaction time on right hand and left hand (Table 1). This show that left handed players were dominant on left and right visual reaction time than right handed players. It is concluded that left hand players are quicker than right hand players on visual reaction time.

Keywords: Visual Reaction Time, Handedness, Handball Players, Chronometer.

Introduction

The time interval from the moment of stimulus presentation or the stimulus to the moment of giving the motor response reflects the speed of the flow of neuropsychological, cognitive and information processes which are created by the action of stimulus on the examinee's sensory system. The receipt of information, its processing, decision making and giving the response-execution of the motor act are the processes which flow one another and make what we call the reaction time.

The reaction time is effected not only by the characteristics of the stimulus(Modality, intensity, volume), but also by its contrast, relation to the base, i.e. the environment which it appears in with the increase of the stimulus contrast in relation to the background, the reaction time becomes shorter. The stimulus of lower intensity, which is very significant for the subject, shortens the reaction time more than an intensive but less significant stimulus. Apart from the physical characteristics of the stimulus, the reaction time is significantly influenced by psychophysical and somatic status of the examinee, such as the level of the emotional tension, motivation, fatigue, attention, fitness, biological rhythm and health. Thus, people who are characterized by "strong" nervous system and low anxiety, when simple sensor motor reaction is in question faster than people do with basic anxiety over the optimal level.

Exercise can affect reaction time. Welford (1980) found that physically fit subjects had faster reaction times, and both Levitt and Gutin (1971) and Sjoberg (1975) showed that subjects had the fastest reaction times when they were exercising sufficiently to produce a heartrate of 115 beats per minute. Kashihara and Nakahara (2005) found that vigorous exercise did improve choice reaction time, but only for the first 8 minutes after exercise. Exercise had no effect on the percent of correct choices the subjects made. On the other hand, McMorris et al. (2000) found no effect of exercise on reaction time in a test of soccer skill, and Lemmink and Visscher (2005) found that choice reaction time and error rate in soccer players were not affected by exercise on a stationary bicycle. Davranche et al. (2006) concluded that exercise on a stationary bicycle improved reaction times. Collardeau et al. (2001) found no post-exercise effect in runners, but did find that exercise improved reaction time during the exercise. They attributed this to increased arousal during the exercise. See the "Arousal" section for effect of exercise also. Lord et al. (2006) found that water exercise over a period of 22 weeks did not improve the reaction times of elderly people. The effects of exercise were reviewed by McMorris and Grayden (2000) and Tomporowski (2003). The purpose of the study was to analysis right and left handed handball players on visual reaction time.

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Methods

Subjects and Variables

Sixty (60) male university handball players were selected and divided into two groups (30) thirty in each. They were classified into right and left handed handball players. These players were selected from Annamalai University, Periyar University, Pune University and Shivaji University. The subjects age range between 20 to 24 years were selected.

Visual reaction time was selected as criterion variables. Visual reaction time was measured on both right and left handed handball players with Chronometer.

Auditory and visual reaction time test

Handball players were asked to sit on a chair in comfortable position facing reaction time counter. They were instructed to press the particular button with their finger. They asked to remove their finger as fast as possible after getting signal such as visual (red light). They were provided with three trials of visual reaction time which was recorded in seconds.

Statistical techniques

't' test was used to compare the mean differences between the two groups. Level of significance was fixed at 0.05. This was considered adequate for the purpose of this study.

Results

The results of the study showed that there was a significant difference existing between left and right handed handball players on visual reaction time on right hand and left hand (Table 1). This show that left handed players were dominant on left and right visual reaction time than right handed players.

Table 1. Visual Reaction Time on Handedness Players

Variables	Dominant Hand players	MEAN	SD	T
VRT ON RIGHT HAND	RIGHT	0.35	0.026	5.84*
	LEFT	0.31	0.027	(p = 0.026)
VRT ON LEFT HAND	RIGHT	0.31	0.029	10.18*
	LEFT	0.24	0.024	(p = 0.034)

Discussion

The hemispheres of the cerebrum are specialized for different tasks. The left hemisphere is regarded as the verbal and logical brain, and the right hemisphere is thought to govern creativity and spatial relations, among other things. Also, the right hemisphere controls the left hand, and the left hemisphere controls the right hand. This has made researchers think that the left hand should be faster at reaction times involving spatial relationships (such as pointing at a target). The results of Boulinquez and Bartélémy (2000) and Bartélémy and Boulinquez (2001 and 2002) all supported this idea. Dane and Erzurumluoglu (2003) found that in handball players, the left-handed people were faster than right-handed people when the test involved the left hand, but there was no difference between the reaction times of the right and left handers when using the right hand. Finally, although right-handed male handball players had faster reaction times than right-handed women, there was no such sexual difference between left-handed men and women. It is concluded that left-handed people have an inherent reaction time advantage. In an experiment using a computer mouse, Peters and Ivanoff (1999) found that right-handed people were faster with their right hand (as expected), but left-handed people were equally fast with both hands. The preferred hand was generally faster. However, the reaction time advantage of the preferred over the non-preferred hands was so small that they recommended alternating hands when using a mouse. Bryden (2002), using right-handed people only, found that task difficulty did not affect the reaction time difference between the left and right hands.

Conclusions

The findings of the study indicated that there was statistically significant difference between right and left handed handball players in visual reaction time. Left hand players are quicker than right hand players on visual reaction time.

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