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COMPARISON OF HAND REACTION ABILITY BETWEEN JUDO AND WUSHU PLAYERS

Kongkham Pradeep Singh
Research Scholar
Laishram Thambal Singh (PhD)
(PhD)
Professor (Corresponding Author)
Thokchom Somorjit Singh (PhD)
Research Assistant
Department of Physical Education and Sports Science
Manipur University, Canchipur, Imphal (Manipur).

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Abstract
The purpose of the study was to compare audio and visual hand reaction ability between judo and wushu players. For this study, 30 (N=30) male players, 15 (n=15) each from judo and wushu sports between 17 to 25 years of age those participated in national competitions were randomly selected. The pertaining data of audio and visual reaction abilities was analysis to investigate mean and mean differences at 0.05 level of significance ($p \leq 0.05$). The result of the study showed the significant mean differences in audio-hand reaction abilities between judo and wushu players as the calculated value 't' = 2.43 is greater than the tabulated value 't' = 2.048 at 0.05 level of confidence ($p<0.05$). Further, significant mean difference was also found in visual-hand reaction abilities between judo and wushu players as the calculated value 't' = 2.47 is greater than the tabulated value 't' = 2.048 at 0.05 level of confidence ($p<0.05$). The result of the study showed that the Judo players had better audio-hand reaction ability and wushu players had better visual-hand reaction abilities.

Keywords: ***Audio reaction ability, visual reaction ability, Judo and Wushu.***

1 Introduction

Reaction ability is one of the important factors for the improvement of performance of athletes. High reaction ability responses quickly to any stimulus and can act effectively in any skills activities. Reaction ability is the capacity of the players to respond fast and to perform a well-designed action of a signal. Reaction time is defined as the interval of time between the presentation of the stimulus and the appearance of an appropriate voluntary response in the subject (1). Human reaction time works by having a nervous system recognize the stimulus, the neurons then relay the message to the brain and the message then travels from the brain to the spinal cord, which then reaches a person's hands and fingers (2). The motor neurons then send signals to the hands and fingers on how to react. The reaction time is measured assessing the level of alertness of the players. Factors that can affect the average human reaction time include age, sex, left or right hand, central versus peripheral vision, practice, fatigue, fasting, breathing cycle, personality types, exercise, and intelligence of the subject (3).

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Judo and wushu are the combating sports. Both games demand physical fitness efficiency for the maintenance of playing performance. The main factors affecting judo performance are balance, reaction time, and power (4). Judo is a fighting sport involving practical intelligence, the power to comprehend events, learning as quick decision-making, and difficult factors to emerge. The ability of a person to maintain equilibrium is also a decisive factor in the development of other motor systems (5). Judo is a way to gain physical strength, coordination, and flexibility as well as mental aspects such as self-confidence, and balance concentration (6). Wushu is a traditional Chinese sport with the main content of fighting action, the form of routine and fighting, and the emphasis on both internal and external training (7). Wushu is a sport that requires skills related to physical freshness, namely muscle stability and strength (especially, legs, hands, back, and abdomen), flexibility or flexibility of the body, body balance, and body coordination(8). Bothe the judo and wushu games need the quick reflex movement to act against the situation demands.

2 Objectives

The objectives of the present study are:

i. To investigate the significant differences in audio-hand reaction abilities between the judo and wushu players.
ii. To investigate the significant differences in visual-hand reaction abilities between the judo and wushu players.

3 Methods

3.1 Selection of Subjects and Tools

In the present study, 30 (N=30) male subjects, 15 (n=15) each from judo and wushu sports between 17 to 25 years of age, those participated in national competitions were randomly selected from Youth Affairs and Sports (YAS), Sports Authority of India (SAI), Khuman Lampak, Imphal and other reputed clubs of Manipur. The pertaining data of audio and visual reaction abilities were collected by administrating the Whole-Body Reaction Type IV (Takei Kiki Kogyo Co. Ltd) and recorded at the nearest 100 of a second.

3.2 Data Analysis

The descriptive analysis and independent ‘t’ test statistical techniques were adopted to determine the characteristics of the data and to investigate the mean differences (if any) of audio and visual reaction abilities between the judo and wushu players. The significant level was set at 0.05 ($P \leq 0.05$).

4 Results

The obtained data of audio and visual hand reaction abilities were treated to determine the mean (M), standard deviation (SD) and significance mean differences between judo and wushu players by using the descriptive and independent ‘t’ test respectively, as shown in table 1.

Table 1
Mean and Mean Comparison of Audio-Visual Hand Reaction Abilities between Judo and Wushu Players

Variables	Groups	N	M	SD	t-value	Sig. p-value
Audio Hand Reaction	Judo	15	0.38	0.06	2.43	0.02
	Wushu		0.47	0.14		
	Judo	15	0.47	0.10	2.47	0.02

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Visual Hand Reaction	Wushu	0.37	0.11

Significant at 0.05, where tabulated $t_{(0.05)}(28) = 2.048$

Table 1 reveals that the mean (M) and standard deviation (SD) of judo and wushu players for audio-hand reaction abilities were 0.38±0.06 and 0.47±0.14, respectively. There was found the significant mean difference in audio-hand reaction abilities between judo and wushu players as the calculated value 't' = 2.43 is greater than the tabulated value 't' = 2.048 at 0.05 level of confidence ($p<0.05$). The mean values reveal that judo players have better audio-hand reaction abilities than the wushu players.

In visual-hand reaction abilities, the mean (M), and standard deviation (SD) of judo and wushu players were 0.47±0.10 and 0.37±0.11, respectively. Further, there was significant mean difference in visual-hand reaction abilities between judo and wushu players as the calculated value 't' = 2.47 is greater than the tabulated value 't' = 2.048 at 0.05 level of confidence ($p<0.05$). The mean values show that wushu players have better visual-hand reaction abilities than the judo players.

The graphical representation of the mean comparison of audio and visual hand reaction abilities between judo and wushu players is shown in figure 1.

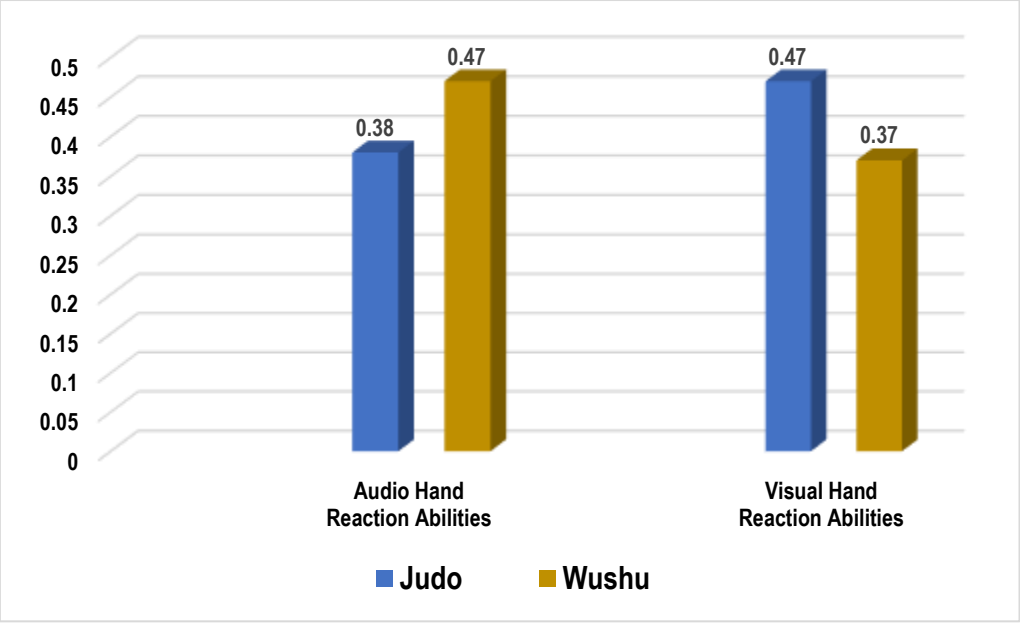

Figure 1: Mean Comparison of Audio-Visual Hand Reaction Abilities between Judo and Wushu Players

5 Discussion of finding

The independent 't' test results reveal significant differences in audio and hand reaction abilities between judo and wushu players. The mean values show that judo players have better audio-hand reaction abilities than the wushu players. The results of significance differences between judo and wushu players might be quick and sound responsive actions against the opponent in offensive and

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defensive playing nature of judo players. Audio reaction abilities can control their opponents. Mainly in judo, the first attack is the best chance to control the opponent. Reaction time is one of the variables that can contribute to excellence in high judo performance (9).

There were significant differences in visual-hand reaction abilities between judo and wushu players. The mean values showed that wushu players have better visual-hand reaction abilities than the judo players. The result might be in wushu, there is a lot of action such as kicks, punches, balance, jumps, sweeps, and throws. In the wushu players always observe the opponent's action. Visual reaction time is the crucial factor for observing the opponents' actions to control the offensive or defensive play.

6. Conclusion

In the present study, significant differences were found in audio and visual hand reaction abilities between judo and wushu players. The judo players had better audio-hand reaction abilities than wushu players and wushu players had better visual-hand reaction abilities than the judo players.

7. References

1. Franciscus Cornelis Donders. Duke-Elder S Br J Ophthalmol, 1959;43(2):65-8.
2. Kumar S. Comparison of the reaction time of male judokas and wrestlers against auditory and audio-visual stimulus. International Journal of Physical Education, Sports and Health, 2020; 7(5): 300-302.
3. Karia RM, Ghuntla TP, Mehta HB, Gokhale PA, Shah CJ. Effect of gender difference on visual reaction time: A study on medical students of Bhavnagar region. IOSRPHR, 2012; 2:452-4.
4. Hamza A, Önder K, Berna K. The Effect of Balance Training on the Reaction Time in Adolescent Period of Children Judoka. Asian Exercise and Sport Science Journal, 2021; 5(2): 53-65.
5. Franchini E, Artioli GG, Brito CJ. Judo combat: time-motion analysis and physiology. Int J Perform Anal Sport, 2013; 13: 624–641.
6. Julio UF, Panissa VLG, Esteves JV, Cury RL, Agostinho MF, Franchini E. Int J Sports Physiol Perform, 2017; 12(5): 676-683.
7. Wen Li, "Introduction to Chinese Wushu", Beijing: People Sports Publishing House, 2005.
8. Dewi SS, Anggela MM and Reni I. Determinants of body fitness in youth Wushu Athlete Saburai Lampung. World Journal of Biology Pharmacy and Health Sciences, 2024; 17(02): 033–047.
9. Lech G, Sertić H, Sterkowicz S et al. Effects of different aspects of coordination on the fighting methods and sport skill level in cadet judo contestants. Kinesiology, 2014; 46(1): 69-78.

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