

Comparison of Nerve Conduction Velocity (NCV) Between Players and Non Players

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Abstract

Introduction: In recent years, a great deal of attention has been focused on the use of surface EMGs in chiropractic practice. Perfect reaction and steadiness are vital to the sports persons. As with most of the systems, the neurological system can be trained and improved with repetitive exercises. Fresh and complete movements may be progressively attempted, practised and perfected involving action through the use of the voluntary nervous system to initiate those actions. Nerve conduction testing (NCT) is an objective method of assessing the functional status of the peripheral nervous system (DeLisa et al.1994). The basis for NCT resides with the proximal and distal reaction propagation that occurs along an entire nerve after electric stimulation.

Material & Methods: For the measure different NCV 30 male subjects from, HVPM's Degree College of Physical Education; Amravati (MS) aged between 18-25 years were randomly selected for this study. Out of 30; 15 were players (P) and 15 were non players (NP). After getting approval detailed information about NCV had been given to the subjects and with the help of BIO-FEEDBACK, ELECTROMYOGRAM [EMG] Apparatus [Make: Medicaid systems with m/ms (meter per milliseconds) units] was used to measure how well and how fast the nerves can send electrical signals and receives reflexes.

Results and Discussion: The study revealed that in all four variables (M-MNCV, M-SNCV, U-MNCV and U-SNCV) players have performed better than non players,

KEYWORDS: Nerve Conduction Velocity, EMG, Sports players.

Introduction

In recent years, a great deal of attention has been focused on the use of surface EMGs in chiropractic practice. Perfect reaction and steadiness are vital to the sports persons. As with most of the systems, the neurological system can be trained and improved with repetitive exercises. Fresh and complete movements may be progressively attempted, practised and perfected involving action through the use of the voluntary nervous system to initiate those actions. Nerve conduction testing (NCT) is an objective method of assessing the functional status of the peripheral nervous system (DeLisa et al.1994). The basis for NCT resides with the proximal and distal reaction propagation that occurs along an entire nerve after electric stimulation.

The unique natural electrical properties of peripheral nerves can be evaluated in health and disease with externally applied stimuli and analysis of the consequent neurophysiologic responses. The findings of nerve conduction velocity may give explanations for poor reaction or performance of the non-players. Due to poor muscle coordination and weakness of muscle (Wilbourn 1990).

The nervous system is divided into the central nervous system (CNS) that includes the brain and spinal cord, and the peripheral nervous system (PNS) comprising cranial nerves and spinal nerves. The PNS includes nerves emerging from the brain (cranial nerves) and nerves emerging from the spinal cord (spinal nerves). These nerves are divided into sensory nerves that conduct messages from various parts of the body to the CNS, whilst motor nerves conduct impulses from the CNS to muscles and glands. The PNS is further divided into the Somatic System (SNS) and Autonomic System (ANS), depending on the area of the body these messages are transmitted to and from.

Effect of exercise on the neurological system: Good coordination and balance is vital to the sports person. The quicker the reactions, the more chance the individual has of having "the edge" over the opposition, or of improving his or her personal best. New and extended movements may be progressively attempted, practiced and perfected involving action with the musculoskeletal systems and, as importantly, the voluntary nervous system to initiate those actions.

It is also important to realise that to some extent nerves serving muscles under our conscious control work in pairs and therefore when rehabilitating an injured part it is often beneficial to exercise and stimulate the symmetrically uninjured part as well.

A nerve conduction study (NCS) is a medical diagnostic test commonly used to evaluate the function, especially the ability of electrical conduction, of the motor and sensory nerves of the human body. These tests are performed by medical specialists such as specialists in clinical neurophysiology, neurology and physiatrists. Nerve conduction velocity (NCV) is a common measurement made during this test. Nerve conduction studies are used mainly for evaluation of parenthesis (numbness, tingling, burning) and/or weakness of the arms and legs.

Methodology:

Total 30 male subjects from, HVPM's Degree College of Physical Education; Amravati (MS) aged between 18-25 years were randomly selected for this study. Out of 30; 15 were players (P) and 15 were non players (NP). The Player are national level sports male studying in various physical education courses but, NP were sedentary male studying in computer courses and had participated neither in any physical training programs nor in any sports competitions for 3 years prior to the test administration.

After selection of subject a written consent from each subject had been gathered for voluntarily participation for this study without any pressure. After getting approval detailed information about NCV had been given to the subjects and with the help of BIO-FEEDBACK, ELECTROMYOGRAM [EMG] Apparatus [Make: Medicaid systems with m/ms (meter per miliseconds) units] was used to measure how well and how fast the nerves can send electrical signals and receives reflexes. To measure the NCV median portion from Wrist and Inner side portion of the elbow joint from ulnar of left hand had chosen. All the measurements had taken in sitting position. The data for Median - Motor Nerve Conduction Velocity (M-MNCV), Median - Sensory Nerve Conduction Velocity (M-SNCV), Ulnar - Motor Nerve Conduction Velocity (U-

MNCV) and Ulnar - Sensory Nerve Conduction Velocity (U-SNCV) has recorded for this study.

Data had saved and statistical treatment and graphical presentation were made by the help of Microsoft Office Excel 2007® software installed on laptop personal computer. For reaching in any conclusion descriptive (Average, SD, SE, Kurtosis, Skewness, Maximum, Minimum, and Range) and comparative statistics (t-test, 2-tail) has been used. The level of significance on the present study had fixed at $p \leq 0.05$.

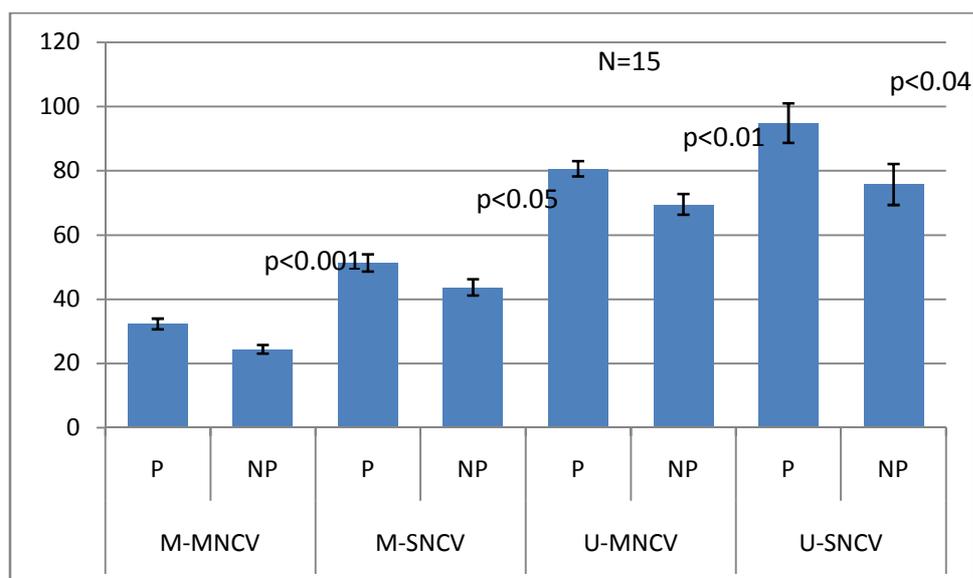
RESULTS

TABLE 1: Descriptive statistics of Nerve Conduction Velocity and comparison between player and non-player.

Particular N=15	M-MNCV		M-SNCV		U-MNCV		U-SNCV	
	P	NP	P	NP	P	NP	P	NP
Average	32.31	24.42	51.32	43.72	80.6	69.52	94.8	75.72
SD	6.43	5.06	10.36	9.82	9.19	12.53	23.85	24.77
SE	1.66	1.35	2.67	2.54	2.37	3.24	6.16	6.4
Kurtosis	-0.74	-0.77	0.02	-0.43	-1.14	0.14	0.69	-0.41
Skewness	0.5	0.76	0.03	-0.61	0.33	1.14	0.87	0.73
Maximum	43.21	34.14	69.69	55.85	97	97	147.06	125.67
Minimum	23.12	18.16	31.12	23.21	69.06	58	58.82	46
Range	20.09	15.98	38.57	32.64	27.94	39	88.24	79.67
t-test (2 tail)	3.67		2.06		2.75		2.15	
p	0.001		0.05		0.01		0.04	

M-MNCV = Median - Motor Nerve Conduction Velocity, M-SNCV = Median - Sensory Nerve Conduction Velocity, U-MNCV = Ulnar - Motor Nerve Conduction Velocity, U-SNCV = Ulnar - Sensory Nerve Conduction Velocity, N = Number of subjects, P = Players, NP = Non Players, SD = Standard Deviation, SE = Standard Error, p = probability.

FIGURE 1: Means comparison of Nerve Conduction Velocity between player and non-player.



M-MNCV = Median - Motor Nerve Conduction Velocity, M-SNCV = Median - Sensory Nerve Conduction Velocity, U-MNCV = Ulnar - Motor Nerve Conduction

Velocity, U-SNCV = Ulnar - Sensory Nerve Conduction Velocity, N = Number of subjects, P = Players, NP = Non Players, p = probability.

Result of NCV of MNCV and SNCV between sports person & non sports was shown in Table 1 and Figures 1 to 4. Within the limitations of the present study significant difference in between players and non-players was witnessed in M-MNCV, M-SNCV, U-MNCV and U-SNCV .In all four variables (M-MNCV, M-SNCV, U-MNCV and U-SNCV) players have performed better than non players.

RECOMMENDATION

On the basis of the result obtained from the study it is recommended that this kind of study should be conducted in large samples from different games of different groups and different levels of players. It's further recommended that this can be done with differently able persons also to see the effect of exercise and physical activities.

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