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The Journal of Rehabilitation Sciences and Research (JRSR) is a quarterly and an editorially independent publication owned by Shiraz School of Rehabilitation Sciences and aims to be a publication of international repute for reporting current regional and international adventures in all aspects of rehabilitation sciences. JRSR welcomes contributions in this field in the form of original research articles, case reports, letter to the editor, and review articles. The Journal seeks to provide its readers with the highest quality scientific information published through a process of careful peer reviews and editorial comments. All publications are in English.

The following guidelines refer to the JRSR requirements for receiving your manuscripts for possible publication. Relying on this guideline speeds up the process of evaluation and publication of the submitted paper. We, regretfully, declare the rejection of those contributions that deviate from the Journal Guidelines.

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1.1. Title Page

The title page for both original research and case reports should include:

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The submission should carry an abstract of no more than 300 words for structured abstract in original research articles. This abstract should state:

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2. Method(s) (selection of study subjects or laboratory animals; observational and analytical

methods)

3. Results (giving specific data and their statistical significance, if possible)

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The unstructured abstract for a case report should state a summary of the case report with no specific headline but including the main corpus knowledge of the report not exceeding 150 words.

For review articles an unstructured abstract maximum to 300 words is eligible.

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Reports of randomized clinical trials should present information on all major study elements, including the protocol (study population, interventions or exposures, outcomes, and the rationale for statistical analysis), assignment of interventions (methods of randomization, concealment of allocation to treatment groups), and the method of masking (blinding).

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The Correlation between Flat Foot and Tension Type Headache in Patient with Tension Type Headache

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Tension type headache
Flat foot
Trigger point
Neck pain and disability

ABSTRACT

Background: One of the most common types of headache is tension type headache (TTH). Postural and myofascial disorders are important in this type of headache. Musculoskeletal disorders occur following changes in kinematics and muscle activity that is caused by abnormal foot structure. Rotation and tilt in lower extremities could change the posture of head and neck. Also, TTH has been related with neck disorders and thus seems to be correlated with flat feet.

Methods: This research was a case-control study on 120 people, with and without TTH. Inclusion criteria were having headache at least for fifteen days per month, no vomiting and no nausea. Exclusion criteria were pregnancy and history of ankle fracture. Every individual were tested by navicular drop test (diagnosis flat feet), then they were evaluated by NDI and NPDS questionnaires (for assessing neck problem). Also, subjects were assessed to check the presence of trigger points in head and cervical muscles. T- test and SPSS were used for analysis data.

Results: The result showed that there was no significant differences between two groups in age and BMI ($P=0.7$, $P=0.87$). There was significant difference between both group in navicular drop test ($P=0.003$, $P=0.016$). Also there was a significant correlation between flat feet and trigger point, neck pain and cervical disability ($P=0.015$, $P=0.02$, $P=0.003$). There was a significant correlation between headache and trigger point, neck pain and cervical disability ($P<0.0001$, $P<0.0001$, $P=0.001$).

Conclusions: flat foot was related with pain, disability in neck and trigger point in head and cervical muscle. Also, trigger point, pain and disability in neck was related with TTH. There was relationship between flat foot and TTH.

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The Comparison of Pain Intensity and Pain Pressure Threshold of Trapezius Muscle Trigger Points in Chronic Low Back Pain Patients with and Without Sacroiliac Joint Dysfunction

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Sacroiliac dysfunction
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ABSTRACT

Background: Dysfunction of sacroiliac joint which is an intermediate link between spinal column, lower limb and pelvis can affect the fascia and as a result presentation of signs and symptoms in other regions of the body is possible. Trapezius muscle is a structure which has attachments to the superficial fascia. Therefore, we proposed that sacroiliac joint dysfunction can affect pain intensity and pain pressure threshold (PPT) of trapezius muscle trigger points through their facial attachments. The Purpose of this study was to investigate the relationship between the presence of sacroiliac joint dysfunction and trapezius muscle trigger points.

Methods: 65 chronic low back pain (LBP) patients older than 35 years old were participated in this study. The subjects were selected from patients who referred to physiotherapy clinics of Shiraz University of medical sciences. Participants should have the history of LBP at least for 6 months without any previous fracture or surgery in spinal columns or pelvic area. Patients were divided into two groups with and without sacroiliac joint dysfunction according the results of the sacroiliac joint tests including Compression test, Gaenslen test, prone knee bending test, Gillettest, sacral thrust, yeomans test, sitting forward flexion test, posterior shear test. Trapezius muscle trigger points PPT were assessed by analometer and pain intensity by visual analog scale. Each measurement was repeated two times and the average of them was used for statistical analysis.

Results: The results of this study showed that the average of pain of the trapezius muscle trigger points were significantly higher in chronic LBP patients with sacroiliac joint dysfunction in comparison to those without sacroiliac joint dysfunction ($P=0.003$). In addition, the pain intensity of the trapezius muscle trigger points was higher ipsilateral to the side of sacroiliac joint dysfunction ($P=0.025$).

Conclusion: According to the results of this study there was a relationship between the presence of sacroiliac joint dysfunction and trapezius muscle trigger points which can be noticed in treatment of LBP patients.

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Evaluation of Service Quality in Selected Rehabilitation Centers of Ahvaz City by Using SYSTRA-SQ Model

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ABSTRACT

Background: High quality services increase the effectiveness of services and service recipient's satisfaction. One of the most important health care services is rehabilitation services. Rehabilitation is time consuming and continuous process. Satisfaction and dissatisfaction of service quality in people with disability (PWD) is effective on their behavior for continuing rehabilitation programs and achieving their desired goals. Assessment of the perceptions and expectations in PWD plays a very important role in the development of quality improvement programs for rehabilitation services. One of the models to evaluate the service quality in various dimensions that considering the expectations and perceptions of PWD is SYSTRA-SQ model. The aim of this study was to determine factors influencing the quality, evaluate the importance of these factors from the perspective of PWD, analysis of the correspondence between expectation and perceptions of service quality and provide the possibility of performance enhancement in selected rehabilitation centers in Ahvaz city.

Methods: We used in this study a new measures adopted in services quality that name is SYSTRA-SQ model. This model consists of 21 item in four dimensions: service system quality, behavioral services quality, device services quality and service transactional accuracy. The modified SYSTRA-SQ with 21 items was used to collect data. The questionnaires completed by PWD in selected rehabilitation centers of Ahvaz city. Validity of the questionnaires were measured by Content Validity Ratio (CVR) and Content Validity Index (CVI), which was 0.81 for both questionnaires and reliability was confirmed by internal consistency ($\alpha=0.92$). After collecting questionnaires, they were analyzed by SPSS/23, EXCEL 2007.

Results: The mean scores of each of the four dimensions of service quality, service system quality, behavioral services quality, device services quality and service transactional accuracy, was 3.01, 2.94, 2.20, 1.85 respectively. It showed that the highest point was related to the system service quality and the lowest point was related to the transaction services quality. Findings showed a significant difference between expectations and perceptions.

Conclusions: This study showed significant differences between the perceptions and expectations of PWD and also service quality gap model in four dimensions SYSTRA-SQ. The results showed significant differences between the physical impairment rehabilitation centers for corrective actions to improve service quality. It is recommended that rehabilitation centers pay more attention to the quality of the components of this model as well.

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Insurance Status of Patients in Rehabilitation Clinics in Bushehr Province

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ARTICLE INFO

Keywords:

Rehabilitation services
Disability
Cost
Insurance

ABSTRACT

Background: Access to high quality medical cares is important for health status and good performance development in disabled persons with low level of health. Access limitations, high costs of rehabilitation services and imperfect coverage of insurance have encountered rehabilitation programs with several problems. This study aimed determining the insurance status of patients in rehabilitation clinics in Bushehr province.

Methods: This study was a descriptive and cross-sectional research. Research population included people who referred to rehabilitation clinics in Bushehr province. A researcher-constructed questionnaire used for gathering data that its reliability was approved by experts and Cronbach's alpha calculated 0.75. Data analysed by SPSS using descriptive statistics.

Results: The most frequent type of disability in studied population was multiple disabled persons. Among rehabilitation clinics, the most subjects were referred to physiotherapy clinics. Forty one (97.60%) of studied population were covered by insurance, 27 (64.30%) had basic therapeutic services insurance and 30 (71.40%) used supplementary insurances. The majority of studied population were supported by governmental institutes.

Conclusions: According to result of this project, the persons who are less than 10 years and more than 40 years old need more rehabilitation services. Rehabilitation is a thought that should be a base of implementing health services and rehabilitation is not only a one-step of process of implementing health services but also it cause to keep abilities.

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The Efficacy of Transcutaneous Electrical Nerve Stimulation, Cold, and Static Stretching on Pain Due to Induced Delay Onset Muscle Soreness

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ARTICLE INFO

Keywords:

TENS
 DOMS
 Cold
 Static stretching

ABSTRACT

Background: Delay onset muscle soreness (DOMS) is one of the musculoskeletal injuries in sport activities that occurred after eccentric muscle activities. There are many modalities to treat it. But there is a lack of evidence to support the efficacy of them. Therefore the aims of present study were in order to: 1-compare changes of pain in elbow flexors due to DOMS after using transcutaneous electrical nerve stimulation (TENS), cold, and combined treatment by TENS and cold. 2-compare the efficacy of static stretching separately and combined with cold and TENS.

Methods: DOMS was induced with repeated eccentric contraction in elbow flexors of 60 male volunteer (age 24 ± 3.4). Two days following exercise pain intensity recorded by visual analog pain scale (VAS). Volunteer assigned to 5 treatment groups by total random allocation and each group received 20 minute treatment.

Results: static stretching, cold, TENS, and combined treatment reduced pain significantly ($P\leq 0.05$). Static stretching combined with other treatment has been more effective in reducing pain as compare to static stretching alone ($P\leq 0.05$).

Conclusion: These results showed the efficacy of therapeutic modalities on pain reduction induced by DOMS. It is suggested that combined treatment associated of TENS, cold and static stretching is better to reduced pain due to DOMS.

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A Comparison of the Effects of Conventional, Dual Task and Multisensory Training Programs on Functional Balance in Elder Adults

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ARTICLE INFO

Keywords:

Elderly
 Aging
 Balance
 Exercise therapy

ABSTRACT

Background: Aging is a complex process that is associated with biological changes over time. It will come for all living things inevitably, but it can be delayed with proper attendance and preventive measures of health and well-being that are associated with long life.

With increasing age, many changes happen in performance of the visual, vestibular and somatosensory systems which eventually reduces postural control and balance.

One of the most common problems in the elderly is falling. Systematic studies indicate that exercise (including balance training) can increase balance and mobility and reduces the risk of falling. The Aim of this study is to compare the effect of three modes of training (conventional, multisensory and dual-task training) on balance performance of older adults

Methods: This was a double-blind study. Forty four volunteer (32 women and 12 men) were randomly assigned into 3 groups: multi-sensory training, dual training and balance training. Subjects performed balance exercises for four weeks. Lateral reach, forward reach and steps tests were taken before and after the intervention. ANOVA and paired t-test were used for between and within group comparisons.

Results: The mean age of the participants was 65.3 years. The ANOVA showed no significant difference between groups. The within group comparisons showed significant improvement of balance in all three groups (lateral reach: group 1 $P=0.014$, group 2 $P<0.0001$, group 3 $P=0.001$), (forward reach: all groups $P<0.0001$), (step: group 1 $P=0.005$, group 2 $P<0.0001$, group 3 $P=0.001$).

Conclusions: The conventional, multisensory and dual-task balance exercises are all effective in improving balance of older adults. There was no significant superiority of one mode of exercise over another.

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The Effects of Kinesiotape and Cross Tape on Latent Trigger Points of Upper Trapezius Muscle Immediately and After 24 Hours

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ARTICLE INFO

Keywords:

Latent trigger points
 Kinesiotape
 Crosstape
 Pain

ABSTRACT

Background: Trigger points are currently becoming more prevalent in almost all populations. They are expressed as hypersensitive palpable nodules in a taut band that are painful on compression and can reduce quality of life. Kinesiotaping and cross taping techniques are considered as modalities which can relieve musculoskeletal pain and as a result increase functional performance. They are applied to the skin with some tension which provides stimulation to the mechanoreceptors, and also reduce compression on pain receptors by raising the skin. Our objective was to evaluate and compare the effects of Kinesiotape and cross tape on latent trigger points of upper trapezius muscle by measuring numeric rating scale.

Methods: This research was a randomized clinical trial. 40 convenience participants were divided into two groups randomly (20 participants in each group). Kinesiotape group was the first group and cross tape group was the second one. Strip space correction technique was used for kinesiotaping application. So a 6-inch length tape with 25% tension at middle 1/3 and no tension in both tails was attached on latent trigger point in upper trapezius muscle. Across tape was easily attached on latent trigger point of trapezius muscle for the second group. Degree of pain was measured immediately after and 24 hours after application of both kinds of taping by numeric rating scale.

Results: All data sets were complete and there were no dropouts. kolmogrove-smirnov test, independent T-test, repeated measure and bonferroni correction were used for statistical analysis. This study showed that decreasing pain degree wasnot significant immediately after taping in both groups (P=0.39 in Kinesiotape group and P=0.06 in cross tape group). However, decreasing pain degree was significant in periods of 24 hours after taping in both groups (P=0.0001 in all circumstances). There was no significant difference between two taping techniques to reduce pain at periods of, before and immediately after taping (P=0.47), before and 24 hours after taping (P=0.34) and immediately and 24 hours after taping (P=0.62).

Conclusions: Both of taping methods have a similar effect on reducing upper trapezius latent trigger points pain. Therefore, applying both tapes for reducing this kind of pain can be recommended. However, it seems that applying cross tape is preferential so that they are easily and quickly attached and are less irritant at the time of detachment and also are cheaper than kinesiotape.

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The Effects of Periscapular Trigger Points Deactivation on Pain and Disability in Patients with Carpal Tunnel Syndrome

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ARTICLE INFO

Keywords:

Trigger point
 Carpal tunnel syndrome
 Ischemic compression
 Pain
 Function

ABSTRACT

Background: Carpal tunnel syndrome (CTS) is the most common peripheral nerve compression syndrome. 3% of women and 2% of men (approximately 2.7% of the general population) are involved. Previous studies demonstrate that periscapular trigger points (TrPs) have a high prevalence in patients with CTS and the pattern of referral pain can mimic the symptoms of CTS. Although, numerous treatments for CTS have been suggested, there is no overall consensus and many patients suffering from persistent pain and disability after physical therapy and surgery. So the aim of this study was to evaluate the effects of periscapular TrPs deactivation on pain and disability in patients with CTS.

Methods: The present RCT study included 16 patients (30 hands) with clinical evidence of idiopathic CTS and case with mild to moderate CTS on the base of electromyography. The patients were recruited from the outpatient physical therapy clinics of Shiraz University of Medical Sciences, by convenient sampling after signing a written consent form. The Patients were assigned to Control and Intervention groups by blocks permutation method. Both groups received 10 sessions (2 weeks) of wrist physical therapy as the follows: Therapeutic ultrasound 3 min, continuous, frequency: 3.0 MHz, ERA: 5 cm², intensity: 1.0 W/cm². TENS Burst type mode, frequency: 110Hz, pulse width: 200µsec for 20 min. The electrodes placed on the median nerve. Also, ischemic compression method was used for periscapular TrPs deactivation in intervention group. The pain, power grip, trigger points sensitivity and disability of the upper limb weredetermined using VAS, Dynamometer, Algometer and Disability of Shoulder and Hand (DASH) questionnaire respectively. A Pair-t test was used to compare the variables in each group before and after the treatment and the differences between the groups were analyzed using independent sample t-test.

Results: Values of the Kolmogorov-Smirnov showed that the distributions of all variables were normal. Our results demonstrate that pain and DASH questionnaire score improved significantly in both groups. Additionally, there was a statistically significant difference in power grip and TrP sensitivity among intervention group.

Conclusions: Our findings suggested that deactivation of periscapular TrPs in patients with CTS is effective in reducing pain and improving function in patients with CTS. Therefore, considering deactivation of periscapular TrPs in management of patients with CTS is suggested for better rehabilitation.

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Comparison of Immediate effect of MET and PRT Techniques to Increase the Flexibility of Hamstring Muscles in Patients with Knee OA

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ARTICLE INFO

Keywords:

PRT
 MET
 Muscle Tightness
 Hamstrings

ABSTRACT

Background: Muscle shortness is an important factor in making muscle imbalance. Short Muscle can cause reflexive antagonist muscle inhibition. The purpose of this study was to compare the efficacy of two manual techniques in increasing the range of motion (ROM) and decreasing pain.

Methods: Twenty patients aged 40-60 with knee osteoarthritis were randomly assigned into two treatment groups. Self-evaluation questionnaire, active and passive knee extension tests were used to detect hamstring muscles tightness. Digital camera used to record and scion image software was used to measure angles. The angle of the knee extension and pain were measured before and after applying the technique in both groups.

Results: Both muscle energy techniques (MET) and positional release techniques (PRT) were effective in increasing range of active and passive knee extension ($P < 0.05$). MET couldn't reduce pain intensity ($P = 0.141$), but the PRT significantly reduced pain ($P = 0.005$).

Conclusions: Comparison of two methods showed that both techniques have the same effect on myofascial pain and increasing active and passive ROM. To increase the ROM in patients with muscle shortness both techniques are advisable but incases associated with pain or trigger points PRT is preferred.

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Sacroiliac Joint Manipulation Improves Pain, Function and Electromyographic Activity of Vastus Medialis, Lateralis and Gluteus Medius in Athletes with Patellofemoral Pain Syndrome: A Randomized Clinical Trial

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ARTICLE INFO

Keywords:

Sacroiliac joint
Manipulation
Electromyography
Patellofemoral pain syndrome

ABSTRACT

Background: Patellofemoral pain syndrome (PFPS) is a common musculoskeletal disorder involving young active individuals and is more common in women and athletes. The etiology of PFPS is unknown but there are various factors such as quadriceps weakness, overuse, delayed or decreased vastus medialis obliquus (VMO) electromyographic (EMG) activity in comparison with vastus lateralis (VL), increased Q-angle, lateralization of the patella in trochlear groove which may cause PFPS. All these factors can cause increasing loads on patellofemoral joint and lead to dysfunctions. The aim of this study was to evaluate the level of activity and onset time of VM, VL and gluteus medius muscles after sacroiliac joint manipulation in patients with PFPS. Beside, we examined the effect of sacroiliac joint manipulation on pain and function of patients with PFPS.

Methods: A convenience sample of 28 athletes (14 males, 14 females) with unilateral PFPS, 3 sessions of regular sport activity per week and aged between 18-40 years old participated in this study. The patients randomly assigned into intervention (manipulation) and control (sham manipulation) groups by Blocked permutation method using randomizer software. Electromyographic activity of the vasti and gluteus medius were recorded before and after manipulation, while performing a heel-rise task with maximum possible velocity. Functional ability and pain intensity were reassessed by Kujala questionnaire and VAS, respectively. The data were analyzed using SPSS, Version 16 (SPSS Inc, Chicago, IL). The comparison of demographic data at base line between groups performed using t-test.

Results: After manipulation, pain intensity decreased and functional level increased significantly in the treatment group. Also, manipulation increased the vasti and gluteus medius amplitude while decreased their onset latency in treatment group. Our results showed that there was a statistical significant difference between mean changes in VMO onset latency and amplitude between groups. ($P=0.002$ and $P=0.008$ respectively). Also, there was a statistical significant difference in mean changes of GM onset latency and amplitude between groups. ($P=0.010$ and $P=0.002$ respectively). Moreover, we found a statistical significant difference in mean changes of pain intensity ($P<0.001$) and Kujala questionnaire scores ($P=0.001$) between groups.

Conclusions: The results of this study suggest that sacroiliac joint manipulation might improve patellofemoral pain and functional level by decreasing vastus medialis and gluteus medius onset latency and increasing their level of activity. It seems that sacroiliac manipulation might be helpful in rehabilitation of athletes with patellofemoral pain syndrome.

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Is Core Neuromuscular Control Different Between Females with Patellofemoral Pain Syndrome and Healthy Ones?

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ARTICLE INFO

Keywords:

Patellofemoral pain syndrome
 Core neuromuscular control
 Trunk postural control
 Unstable seat

ABSTRACT

Background: Patellofemoral pain syndrome (PFPS) or anterior knee pain is one of the most common orthopedic complaints. Recently, neuromuscular control of proximal structures is considered in development of this syndrome. The purpose of this study was to compare the ability of trunk postural control during unstable sitting between females with PFPS and healthy control group.

Methods: In this study, 21 non athletic females with PFPS and 21 matched healthy females participated. Inclusion criteria were anterior knee pain at least for 4 months, positive Clark test. Exclusion criteria were knee osteoarthritis and trunk or lower limb surgery. Coordinates of center of pressure (COP) data were recorded by using of force plate during sitting on unstable seat. COP parameters including range of displacement in anterior-posterior direction (APDCOP), the range of displacement in medial-lateral direction (MLDCOP), mean velocity of displacement (VOCOP) and area of displacement (ACOP) were analyzed.

Results: The mean of all investigated COP parameters were different significantly between two groups. ($P < 0.05$)

Conclusions: The results showed that the ability of trunk postural control in patients with PFPS during unstable sitting is less than healthy individuals. This can be an evidence for core neuromuscular control deficits in patients with this syndrome. Therefore, evaluation of this area in these patients seems necessary.

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Comparison of the Ability of Word Perception in Auditory-Only and Auditory-Visual Modes In Two Groups of 5-7 year-Old Persian Children: Cochlear Implant And Hearing-Aid Users with Their Normal Hearing Peers

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ARTICLE INFO

Keywords:

Word perception
 Auditory only
 Audio-Visual
 Cochlear Implant
 Hearing aid

ABSTRACT

Background: Since dominancy in modality is very important in the language acquisition, survey of superiorities processing in children with hearing loss, has considerable importance in the education and rehabilitation of these children. Therefore, the purpose of this study was to compare word perception ability by two methods of auditory-only and auditory-visual between Persian 5-7 year-old cochlear implant and hearing aid user children, and their normal hearing peers.

Methods: This was a descriptive - analytical study in which 30 children with hearing loss (20 children with cochlear implant and 10 children with hearing aid) and 30 matched normal hearing were selected. The participants were assessed by means of a sub test picture vocabulary of TOLD-P3, which is standardized in Persian population. Then the groups were compared with each other.

Results: In both groups children with cochlear implant and hearing counterparts ability of word perception on auditory-visual mode was more than auditory-only mode ($P=0.001$). While, in the hearing aid users, this ability by the two modes was the same ($P=1.00$).

Conclusion: It seems that visual modality accompanied by auditory modality can improve the performance of children with hearing impairment in tasks related to the understanding of the word.

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Survey of Pain Rates in the Neck, Back and Shoulders Wheelchair Users

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ARTICLE INFO

Keywords:

Ergonomics
Wheelchair
Pain
Rehabilitation

ABSTRACT

Background: Studies have shown that musculoskeletal disorders causes severe psychological effects among wheelchair users and this is a major risk factor for disability and pull over this stratum from the society activities. The purpose of this study was to determine musculoskeletal disorders of the upper limb and related factors in manual wheelchair users.

Methods: This cross-sectional study was done in manual wheelchair users. Body Map musculoskeletal Disorders and demographic questionnaire were used to assess subjects.

Results: The findings of this study showed the degree of pain in different region of body as follows; neck pain (82.5% no pain, 7.9% mild pain and 9.5% severe pain), back pain (79.4%no pain, 4.8% mild pain and 15.8% sever pain), pain in right shoulder (71.4%no pain, 6.3% mild pain and 22.2% severe pain), pain in the left shoulder (76.2%no pain, 6.3% mildpain and 17.4% severe pain). The results showed a significant relationship between the complaint of pain in the shoulder with the use of wheelchair during day ($P=0.04$) and history of disability ($P=0.03$).

Conclusion: The results showed the maximum pain was in the right shoulder. This study also showed the correlation between the history of disability, activities during the day and musculoskeletal disorder. The musculoskeletal disorders could increase with the adverse effects of prolonged sitting and tissue dystrophy and increase history of disabilities. Also repetitive use of wheelchair during day cause rotator cuff muscles problems and pain in the shoulder.

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Comparison of Core Muscles Endurance and Dynamic Stability in Seated Occupied Staff and Non-Seated Occupied Staff of Shiraz University of Medical Sciences

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ARTICLE INFO

Keywords:

Core/trunk muscle endurance
McGill's trunk flexor endurance test
Star excursion balance test (SEBT)
Seated/non-seated occupations

ABSTRACT

Background: Core muscle dysfunction might serve as a risk factor for future musculoskeletal dysfunctions. Considering the high percentages of adults employed in mainly sedentary occupations in Iran, there is a need to clarify the strength of evidence on the potentially deleterious impact of prolonged sitting at work on the biomechanics of core/trunk muscles. This study aims to evaluate trunk/core muscle endurance in employees of seated and non-seated jobs in Shiraz University of Medical Sciences.

Methods: A total number of 100 employees of Shiraz University of Medical Sciences were studied in two groups, seated jobs (n=50) and non-seated jobs (n=50). Seated jobs (office employees) were defined as those requiring the employees to sit more than half of their work time in a day, whereas non-seated jobs were those requiring less than half a work day to sit. Trunk endurance time was measured by the four different stabilization tests including McGill's trunk flexor endurance test, Sorenson's trunk extensor endurance test and right and left trunk flexor endurance test (Side-Bridge test). The Star Excursion Balance Test (SEBT) was used as a dynamic postural-control assessment of the core muscles. All subjects performed three trials for each test and the average performance was reported. Statistical analysis was performed using the SPSS software version 21 (SPSS, Chicago, IL) Independent t test was used.

Results: results showed that subjects in non-seated group had a statistically significant higher trunk endurance time for all four static tests (all $P < 0.001$). Similarly, for the SEBT, non-seated subjects had higher statistically significant performance (all $P < 0.001$) comparing to seated subjects.

Conclusion: Prolonged occupational sitting is associated with reduced core muscle endurance. It may cause relations hip between weakened core/trunk muscles and development of specific occupational musculoskeletal dysfunctions such as low back pain.

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Patients with Multiple Sclerosis and Stammer: A Case Report

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ARTICLE INFO

Keywords:

Multiple sclerosis
Stammer
Chronic disease

ABSTRACT

Background: Multiple sclerosis (MS) is a progressive chronic disease. In this disease, some patients encounter with speech and ingestion problems resulting from the muscular weakness. However patients don't notice often to the speech disorders.

Case Report: A 32 years old woman suffering from MS has referred to the speech therapy clinic by complaining the sever stammer. According to the performed assessments, we observed the weakness in the oral functions like accuracy, strength and speed of the tongue movements, lips and velo-pharyngeal sphincter (VPS). Because of the weakness in the breathing muscle and VPS, speech of the patient is scanning and breathiness. Stammer pattern of applicants is the block and prolongation and the stammer intensity was severe at the base of SSI-III form. The applicants had the experience of the stammer that was removed by the speech therapy and again was appeared by incidence of MS disease.

The patient treated by massage, PNF and sensory stimulation, in order to prevent the negative effect and improve oral function. Furthermore, improvement of the breathing pattern, the increase of the breathing volume and speech harmony and breath, vowel strain, audiovisual feedback were applied at the treatment program.

On the base of mental advancement, the speech therapy was concentrated on the reduction of fear and preventing from stammer, irritant, intentional stammer and freezing. It was treated by using the mild and smooth contact, easy onset, changeable speed and also by using controlled mental profound feeling.

Conclusion: After 15 session of treatment, the fluency of the speech increased and on the base of SSI-III form, it arrived to the moderate level. Furthermore, the breathing and oral function improved.

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The Effect of Balance Training on Clinical Balance Performance in Obese Patients Aged 20-50 Years Old Undergoing Bariatric Surgery

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ARTICLE INFO

Keywords:

Balance training
Obesity
Balance
Weight loss

ABSTRACT

Background: It is estimated that over one billion people suffer from overweight worldwide, among whom, 300 millions are classified as obese. Obesity can result in many serious, potentially life-threatening health problems. One of these complications is balance control insufficiency. Obesity treatment and management may include a combination of diet modification, appropriate physical activity, exercise, behavior modification, drug consumption, and sometimes surgery to reduce excessive weight. This study aimed to examine the effect of balance training on obese individuals seeking for sleeve gastrectomy.

Methods: This clinical trial was conducted on 32 subjects selected through convenience sampling. The subjects were divided into two groups by random allocation (16 in the intervention group and 16 in the control group). Both groups underwent bariatric surgery. The intervention group attended balance exercise sessions for 4 weeks (4 sessions per week), whereas the control group did not attend any balance exercise sessions. Before and after the intervention, the static, dynamic, and functional clinical balance tests were done in the intervention group. The tests were also done in the control group twice with a 4-week interval.

Results: After 4 weeks balance training exercise, a significant difference was found between the intervention and the control group regarding static, dynamic, and functional balance tests.

Conclusions: Attending balance exercises program for 4 weeks can improve balance among obese individuals undergoing gastric sleeve surgery.

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Repeated Sprint Ability (RSA) Correlation with Quadriceps Endurance and Strength in Soccer Players

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ARTICLE INFO

Keywords:

SA
Endurance
Strength
Quadriceps
Soccer

ABSTRACT

Background: Soccer is one of the most popular sports in which high intensity efforts are repeated. In soccer, many factors may affect the athlete's performance. With attention to this point that endurance and strength of quadriceps are beneficial for match-performance of these athletes, we would like to assess the relationship between the endurance and strength of quadriceps muscle with RSA, in club soccer players.

Methods: Thirty one male club- soccer players volunteered to participate in this study. The participants had at least 2 years' experience of playing in club, and they were in competition season. The age range of participants was 18 to 25 years. Any muscular or joint injuries were the exclusion criteria for this study. Total sprinting time (sum of the 12 sprints times) and performance decrement during the RSA test (total sprint time/best 20 meter sprint time*12/100) were measured. The endurance and strength of the quadriceps muscle of dominant lower extremity were recorded by use of dynamo meter. We used a Pearson Correlation test to analysis the measures of the study. The statistical analysis performed by SPSS 16.

Results: This study was done on 31 male club- soccer players with mean age of 21.9 ± 2.08 . There were no significant correlation between the RSA measures and quadriceps strength. Moreover there was no significant correlation between the total time of RSA and quadriceps endurance. The correlation between the performance decrement and quadriceps endurance was significant ($P=0.010$, $r=0.453$).

Conclusions: The finding of our study may be due to that in soccer players, training program is consisted of endurance and strength training that both enhance the endurance capacity of the athlete's muscles. Another training program is speed endurance training that enhances capillarization and oxidative capacity, too. Therefore, we would like to state that the correlation between the muscle endurance and performance decrement and no significant correlation between the muscle strength and performance decrement indicate that the quadriceps muscle of soccer players have more endurance rather than the strength.

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The Comparison of Pectoralis Minor Self-Strech and MET on Round Shoulder Improvement in Girl Students of Shiraz University of Medical Sciences Aged 18-25

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ARTICLE INFO

Keywords:

Pectoralis
 Self-Strech
 Improvement

ABSTRACT

Background: One of the common problem in modern societies especially among young girls, is rounded shoulder posture. The pectoral is minor tightness has a direct effect on the kinematics of scapula which change the natural rhythm of the movement of scapula and shoulder. This abnormal condition causes exhaustion and muscular chronic pain for a longtime. So many researches have been done for treating this bad posture, which has compared the effect of the pectoralism in or stretch with other remedies. The purpose of this study is to compare the effect of two techniques, MET and pectoralism in or self-stretch on round shoulder improvement.

Methods: 60 girl students of Shiraz University of Medical Sciences aged 18 to 25, were participated in this study. Subjects, whose acromion- vertebral plumb interval was 1cm or more than this, were entered the study. The changing rate of the forward head and for ward shoulder angle before and after the treatment were measured. The subjects were divided in to three groups by random block method. In self-stretch group and MET group, the intervention was done three times a week for 2weeks. Control group, with no intervention was used to investigate the constancy of two technique. The angles were measured for a further time 4weeks after finishing remedial meetings.

Results: A significant difference was observed in the for ward head and forward shoulder angle before and after interference, in both groups. Obtain edimprovement remained for four weeks after finishing the treatment in both groups. There was no significant difference between two groups of MET and self-stretch.

Conclusions: Both MET and self-stretch methods have the same effect in increment of the forward shoulder and forward head angle. Consequently, they cause the posture of head and shoulder to be improved.

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Assessment of Musculoskeletal Disorders Prevalence among Bank Clerks Working in Shiraz

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ARTICLE INFO

Keywords:

Musculoskeletal disorders
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 Nordic questionnaire
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ABSTRACT

Background: Nowadays, musculoskeletal disorders are among the most prevalent occupational diseases. They are also considered as one of the main reasons for absence from work and probably reduced productivity. So, the aim of this study was to estimate the prevalence of symptoms of musculoskeletal disorders among bank clerks in Shiraz.

Methods: In this analytical cross-sectional study, 106 workers of bank in Shiraz City were evaluated. The standardized Nordic questionnaire was used to assess the prevalence of musculoskeletal disorders. The data was analyzed in SPSS16.

Results: The mean age of the samples was 39.01 years. Their mean duration of employment was 15.32 years. Overall, 88.7% of the participants had experienced musculoskeletal disorders at one of their extremities. The highest prevalence of musculoskeletal disorders in the past 12 months was detected in Low back (74.5%), neck (65.1%), and shoulder (50.9%). Age, years of employment, BMI and Marital status had the strongest correlation with the incidence of musculoskeletal disorders.

Conclusions: Education of ergonomic principles for the bank clerks and ergonomic interventions like correction of postures, reducing of work duration, armrest, foot rest, cushion, strengthening exercise and regulating of work station application have a significant effect on the decreasing musculoskeletal disorders prevalence among bank clerks.

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The Effect of Transcutaneous Electrical Stimulation on Postural Stability in Patients with Diabetic Peripheral Neuropathy

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ARTICLE INFO

Keywords:

Diabetic neuropathy
Postural control
Transcutaneous Electrical Nerve Stimulation

ABSTRACT

Background: Diabetic neuropathy is a common complication of diabetes. According to the previous studies, people with diabetic neuropathy have deficit in postural stability. Sensory stimulation could be used to improve postural stability and balance. Tactile stimulation has improved balance in patients with diabetes, but the effects of electrical stimulation, which are used commonly, was not investigated. The aim of this study was to evaluate the effect of electrical stimulation on postural stability in patients with diabetic neuropathy.

Methods: This clinical trial study was done on 28 patients with diabetic neuropathy in both control and intervention groups (14 persons in each group). Mean center of pressure displacement and velocity in double leg stand position, was recorded by a force plate. Variables recorded before, immediately after, 15 minutes and 30 minutes after intervention, which consisted of 5 min electrical stimulation on the knees. Data analysis was performed by using of Excel software and related formulas. For statistical analysis Independent t-tests and repeated measures test was used.

Results: The results showed that although mean COP displacement and velocity decreased in both intervention and control groups, but it was not significant. Also the difference of mean displacement and velocity of the center of pressure in the two groups was not significant.

Conclusions: It seems that sensory electrical stimulation, could not improve postural stability in diabetic neuropathy patients.

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Short Term Effects of Forearm Kinesiotaping on Force Sense of Wrist Flexor Muscles

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ABSTRACT

Background: Force sense evaluation is one of the methods to evaluate proprioception. Force sense is described as the ability of brain to reproduce muscular force tension. Force reproduction error is a common method to evaluate the force sense. The aim of this study was to investigate the short term effects of forearm Kinesiotaping on force sense of wrist flexor muscles

Methods: In a Quasi-experimental study, forty five female (mean age 24.46 ± 3.66) from Shahid Beheshti University of medical science in Tehran city in a convenient sampling, took part in this study. Exclusion criteria for subjects were history of elbow or wrist ligament or tendon injury, dominant upper limb fracture or nerve injury within the previous 6 months or use of corticosteroid drugs within the previous 1 year. Participants were investigated in three groups: "1-No taping (control group), 2- with upY and 3- down Y taping. Force sense of dominant hand before and after 24 hours of forearm kinesiotaping was measured with a hand held dynamo meter. 50% of the maximal grip strength was set as the value of target force. In begin of test, the subject attempted to exert the handle of the hand dynamo meter while receiving visual feedback(mirror). Once the target force was achieved, the subject was instructed to maintain it for 3 s and concentrate on how much force value was being exerted. After 3 s, the subject was instructed to relax. Then the mirror was removed and instructed the subject to reproduce the force value and announce once the target force had been achieved. The reproducing force value was recorded. The measurement was repeated 3 times. Absolute and related difference between the target force and the reproducing force of the each trial were calculated. The average of 3 trial errors was used as the absolute force sense errors and related force sense errors. The paired t test and one-way ANOVA were used to compare the differences in absolute and related force sense error before and after taping for each group and between the three taping conditions respectively. A Tukey post hoc analysis was performed on any significant findings.

Results: Following the taping a significant decrease was found for related force sense error in upY taping group rather to control group. Meanwhile in absolute force sense error no significant difference was identified among 3 taping conditions. Also no significant change was found for each group in absolute and relative force sense error pre and post taping.

Conclusions: Forearm kinesiotaping may have reduced relative force sense error in healthy female. However it needs more future studies.

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The Effect of a Balance Exercise Training on the Clinical Balance Measures in Females with Diabetic Neuropathy Type II

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 Diabetes
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 Exercise
 Ball training

ABSTRACT

Background: Prevalence of diabetes is increasing, mostly in females. Peripheral neuropathy is a common problem in diabetic patients that leads to balance impairments. Balance impairment is the most important risk factor for falling down in diabetes. Effective exercise on balance of females with diabetes should be evaluated. A few investigations have attempted to assess exercises in balance impairments in this population. Therefore this study was planned to evaluate balance exercise training on the clinical balance measures in females with diabetic neuropathy type 2.

Methods: Thirteen diabetic neuropathy type 2 were recruited conveniently. Patients classified into two groups by random allocation: an experimental group of 15 participants (56.13±5.43 years old) that received ball training exercise, and a control group of 15 participants (54.96±5.96 years old). The experimental group performed 55 min, 5 days a week for 3 weeks exercise training. Static and dynamic clinical balance measurements were assessed by using SPSS.18 with independent t-test and paired t-test.

Results: Ball therapeutic exercise program significantly improved Static balance from single leg stance ($P<0.05$), dynamic balance from Star excursion test ($P<0.05$) and Berg Balance Scale test ($P<0.05$).

Conclusions: These results suggest that ball training exercise is suitable to improve balance in females with diabetic neuropathy.

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The Effects of Plantar Flexor Muscles Fatigue on the Lower Extremity Muscles Onset Latency in Response to External Perturbation

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Keywords:

Postural control
Plantar flexor
Fatigue
Onset latency
External perturbation

ABSTRACT

Background: The maintenance of postural control against external forces is a key component of dynamic physical activity. The postural control system, often, needs a quick reaction in response to external perturbation. Plantar flexor muscles play a significant role in postural control during small perturbations. Muscular fatigue is one of the mechanism that affect the muscular onset latency and activation patterns. The muscular fatigue affects the postural control system in daily activities. It has been shown that muscle fatigue can reduce the maximum muscle force, change the movement control and delay the reaction time. Therefore, it can be a predisposing factor form usculoskeletal injuries. However, there are no consensus about the effects of plantar flexor muscle fatigue on the lower extremity muscles onset latency in response to external perturbation. Therefore the aim of this study was to investigate the effects of plantar flexors fatigue on the soleus and semitendinosus muscles onset latency in response to external perturbation.

Methods: 24 healthy female subjects (25-30 years) participated in this interventional study. The electrical activity of right and left soleus and semitendinosus muscles were measured by a digital telemetric ME 6000 EMG analysis system equipment (Mega Electronics Ltd, Finland) following external perturbation in sagittal plain before and after plantar flexor muscles fatigue. The measurements repeated 3 times with 30-second intervals and the mean was used for analysis.

Results: The statistical analysis demonstrated that the onset latency of right and left soleos and semitendinosus increased significantly in response to the external perturbation after plantar flexor muscles fatigue ($P < 0.05$)

Conclusions: It seems that the postural control system uses different control strategies in the different conditions which depends on the difficulty of that condition. Following the muscular fatigue, especially in critical conditions such as applying an external perturbation in which the risk of musculoskeletal injuries is higher, due to the abnormal condition in the postural control system, the postural responses are not able to activate the muscles at the usual time and therefore lead to muscles delayed response. It seems that there is a potential risk for loss of balance duo to delayed activation of muscles. Therefore it is important to pay more attention to the plantar flexor muscles fatigue during dynamic postural tasks.

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The Comparison of the Effect of C5-C7 Mobilization with Median Nerve Neurodynamic Technique on Pain, Neck Disability Index and Elbow ROM in Patients with Cervical Radiculopathy: An Interventional Clinical Trial

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Keywords:

Cervical radiculopathy
Cervical spine mobilization
Median nerve neurodynamic technique
Elbow extension

ABSTRACT

Background: Cervical radiculopathy occurs as a result of cervical nerve root pathology. Anything that occupies the cervical intervertebral space can cause inflammation or compression of the nerve roots or both. The present study aimed to compare the effectiveness of C5-C7 mobilization with median neurodynamic technique on elbow range of motion, pain relief and neck disability index in patients with cervical radiculopathy.

Methods: This study is an interventional clinical trial. 36 patients aged 35-50 Y/O with cervical radiculopathy randomly allocated to 3 different groups. This study was carried out in physical therapy clinics affiliated to Shiraz University of Medical Sciences. The patients received mobilization technique and electrical stimulation and heat therapy in group A, median nerve neurodynamic technique, electrical stimulation and heat therapy in group B, electrical stimulation and heat therapy for 20 minutes in group C. The mean neck pain intensity, the mean ROM (degree) of passive elbow extension during the upper limb tension test 1 and the neck disability was measured by visual analogue scale, a goniometer and neck disability index respectively. Median nerve F wave recorded from flexor carpi radial is before and after interventions.

Results: The mean neck pain intensity decreased significantly in all groups ($P < 0.05$) but no significant difference was seen in mean difference between three groups ($P > 0.05$). The mean disability decreased equally in groups A and B but no significant difference was seen in group C. The mean ROM of the involved elbow decreased significantly in groups A and B ($P < 0.05$) so that the decrease was greater in group B than A ($P < 0.05$), but no significant difference was seen in group C ($P > 0.05$). The mean latency of the F-wave at the involved side decreased in all three groups and the decrease was greater in group A than in B and C. The mean velocity and persistency of the F-wave at the involved side increased in groups A and B so that the increase and persistency was greater in group A than in group B.

Conclusions: Findings of this study indicated that both cervical mobilization and median nerve neurodynamic technique could similarly decrease neck pain intensity. Median nerve neurodynamic technique makes greater increase in elbow extension compared to the other two interventions. As can be understood from the results of this study, the spine mobilization technique has been able to make more positive changes in the F-wave parameters in comparison to the nerve neurodynamic technique.

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The Comparison of Vo_2 max between Exercise-Trained and Untrained Male Students between 18-35 Years Old with Treadmill Test

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ARTICLE INFO

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Vo_2 max
 Treadmill Bruce protocol
 Exercise-trained
 Exercise-untrained

ABSTRACT

Background: Vo_2 max is the maximum amount of oxygen that a person consumes during exercise until he or she becomes completely tired. Vo_2 max is the best indicator for the evaluation of aerobic capacity and the tolerance of cardio-respiratory system. One of the most common tests for the evaluation of vo_2 max is the Bruce treadmill protocol. The aim of this study was to show the importance of regular and simple training exercises to improve Vo_2 max in young adults.

Methods: Forty male students between 18-35 Y/O participated in this case-control study. Twenty of them were trained and 20 were untrained. (Exercise-trained students contribute for at least one hour of aerobic exercises, 3 days a week, at least in recent 3 months). Cases selected from students of Shiraz University of medical science. The required information was gathered through a questionnaire which contains the questions about length, weight, exercise case history, type of aerobic exercise and duration of treadmill running. If some body refusing to contribute the test, he was replaced with another one. In this study Vo_2 max was calculated using the Bruce treadmill protocol and T-test was used for statistical analysis.

Results: The results of the present study showed that exercise-trained students run on treadmill for a longer time compared to untrained students. Also Vo_2 max in trained male students have been approximately 10 unites higher than untrained ones ($P < 0.001$).

Conclusions: Regular aerobic exercising may increase the Vo_2 max and the Bruce treadmill protocol can be used for calculating Vo_2 max.

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Determining Relationship between Speech Intelligibility and Duration of Cochlear Implant Use in Persian Children

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ARTICLE INFO

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Speech intelligibility
Cochlear implant
Hearing impairment
Hearing loss

ABSTRACT

Background: There is no debate that severe to profound hearing loss has an effect on oral communication. The most influences are on speech intelligibility. Recently cochlear implant is known as the best hearing-aid device for severe to profound hearing-impaired children. Different factors affect the speech intelligibility in hearing-impaired children. One of these factors is duration of cochlear implant use. So the aim of the present study was to determine the relation between speech intelligibility and duration of cochlear implant use in Persian children.

Methods: This is a descriptive-analytic study (a prospective study). 12 using-cochlear implant children were assessed by speech intelligibility test after 2 years. Then the results of the first and second year after implantation were compared.

Results: There was significant difference between the scores related to first year and second year.

Conclusions: In conclusion there is a direct positive correlation between duration of cochlear implant use and speech intelligibility.

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