COMBATING REST DECONDITIONING OF HANDBALL PLAYERS WITH LOW BACK PAIN THROUGH PHYSIOTHERAPEUTIC AND PHYSICAL EDUCATION METHODS

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Keywords: physiotherapy, physical education, low back pain, handball players

Abstract: Posttraumatic low back pain is a common problem among performance athletes, but also other professional categories. Functional deficiency of lumbar column can cause the inability to participate to sports trainings, and in worse cases, the incapacity of self-care or social integration. In the rehabilitation of this performers it is important the collaboration of multiple specialists, the physician, the physiotherapist, the coach, the psychotherapist, the entire team and family support, all leading to speeding the positive results and prevent the emergence of depression. in this study, there were observed 39 handball players, devided into two groups, control group and study group. After applying the complex physiotherapic treatment, and the meintenance of study group active through physical education lessons and physiotherapy, the results supported the hypothesis that the physiotherapeutic treatment and physical education lessons have the most important role in the recovery and combating rest deconditioning.

Introduction: The spinal column represents the most important segment included in locomotor system, due to the fact that all the other body parts are connected to it. The vertebras present specific features: voluminous and transversely elongated body, long transverse process (representing remnants of ribs), and the real transverse processes, are small and called accessories processes. The spinal column allows good mobility for flexion and extension, lateral inclination and rotations.

In handball play, the spinal column is very solicited due to the jumps in shot on goal, which involves a complex of moves (extension, flexion, inclinations and rotations), inducing tension in ligamentous system, and due to the landings preceding the flight phase of jumping, which solicits the vertebral column through pressures on intervertebral discs, which have the tendency to return to the initial state of balance.

Low back pain affects 80% of population, and represents the most frequent cause of interrupting sports activity for players who suffered a direct impact with the opponent.

Posttraumatic low back pain are initially produced by small and repeated traumatisms suffered by vertebral column, and secondary it is produced by unsuitable footwear, wrong management of breaks between trainings and failure to comply the conditions of individual rest.

The study has the purpose to maintain the handball players in sports activity, in the limits of their issue, posttraumatic low back pain, through physiotherapy and physical education, respecting the development conditions of sports training lessons for decreasing rest deconditioning.

Material-method: In this study there were elected 39 subjects, based on clinical and paraclinical manifestations and examinations, aged between 18 and 24 years, male, playing handball.

The subjects come from both rural and urban areas, but none of them practices other activity than playing handball (Table 1, Chart 1 and Chart 2).

The study was conducted on 4 weeks period, within Physiotherapy and Swimming Complex of “Stefan cel Mare” University of Suceava. There were applied initial and final tests to be compared, and also intermediary tests in order to evaluate the physiotherapeutic treatment during the study (there were presented only initial and final tests). Based on assessments, it was elaborated a functional rehabilitation program through physiotherapy, and a maintenance of endurance through physical education lessons, and it was observed the progress obtained during the entire study, all data being quantified.

Table 1 – The distribution on area and age of handball players.

GROUP / ENVIRONMENTAL ORIGIN		18 – 21 year old	22 – 24 year old	TOTAL
CONTROL GROUP	RURAL	2	3	5
	URBAN	5	9	14
STUDY GROUP	RURAL	3	4	7
	URBAN	5	8	13
TOTAL		15	24	

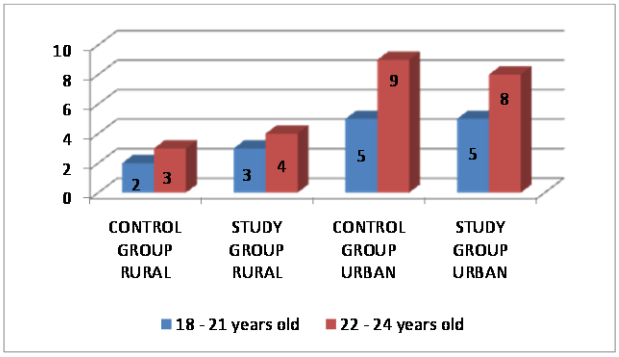

Chart 1 – The distribution on environmental origin and age of handball players.

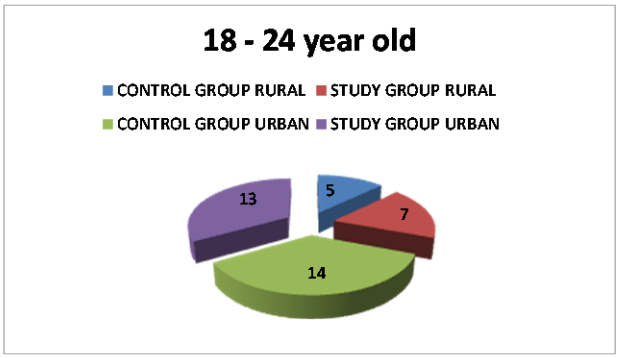

Chart 2 – The distribution on environmental origin.

The players were divided into two groups, control group and study group, the first one having 19 handball players, from which 5 come from rural area and 14 come from urban area, and the second one, composed by 20 players, 7 coming from rural area and 13 coming from urban area.

The control group patients were recommended repose (they did not participate to sports activity), medication prescribed by the physician (nonsteroidal anti-inflammatory, pain-killers, muscle relaxants), and electrotherapeutical treatment (low frequency currents: Trabert, with

analgesic and hyperemia effect, and Transcutaneous Electrical Nerve Stimulation – TENS, atraumatic method of combating pain; medium frequency currents: interferential current with excitomotor effect on striated muscle, muscle relaxing and trophic effect, analgesic effect through decreasing pain excitability, excitomotor action on smooth muscles).

The study group patients benefited of the same medication and electrotherapeutical treatment, but in addiction, they were included in a physiotherapeutic program, and attended physical education lessons for combating repose deconditioning of the players.

In order to evaluate the patients, after medical diagnosis, it was used VAS (Visual Analogue Scale) for the pain, Schober test for lumbar column mobility, Tomayer index to confirm the Schober test results, manual testing of muscular strength, weight, body mass index and LBP scale (Low Back Pain) to assess functional index and quality of life.

The criteria for excluding patients from the study were:

- Electrotherapy contraindications: cancer, acute stage of illness, inflammatory diseases in acute stages, osteosynthesis material;
- Low back pain of another cause (lombosciatics, disc herniation).

The rehabilitation program lasted 20 days and was identical for each patient, both from the study and the control group, excepting that the players from the study group benefited of physiotherapy and physical education lessons. Within the electrotherapeutical program the procedures intensity varied considering each patient physiological possibilities and limits, and sensibility.

The initial evaluations indicated an important decrease of range of motion of lumbar spine, Schober 11 – Schober 13 / Tomayer 11 – Tomayer 21, limited muscular strength caused by pain (the values were almost the same both for flexion and extension), F3, the values obtained using VAS Scale were between 7 and 9, BMI was normal, LBP index showed low values, <18, weight is an important parameter for the final evaluation, but it had normal values for the initial ones.

The patient were questioned in order to establish if they can perform recreational, professional, and daily activities, and all of them obtained low values for quality of life. After establishing the functional deficiency, there were established the goals of physiotherapeutic program and physical education elements, goals which had the role to control the efficiency of the program and objectivation of results.

The goals aimed to improve the quality of life for the players, early reintegration in sports activities, decrease of rest deconditioning, decrease of functional deficiency, maintenance optimal weight and BMI, decrease of pain and inflammation, increase of mobility, muscular strength and tonus, first goal being returning as early as possible to sports and competitive activity.

Physiotherapy aimed muscular relaxing, through static kinetic techniques and isometric contraction; there were also used akinetic techniques, like corrective posture, and kinetic techniques, like active mobilization with and without resistance. It was appealed to therapeutic physical exercise, in order to promote muscular strength and tonus, and to stretch lumbar column.

For neuromuscular reeducation there were used neuroproprioceptive rehabilitation techniques for torso, Klapp method for postural reeducation, for muscle activation, both lordosis and kyphosis positions, and Kabath method, for tonification of back muscles (thoracic erector, lumbar erector, large gluteus, lumbar square), and abdominal muscles (superior and inferior abdominal muscles and abdominal obliques), in order to promote pain limited mobility and increase of functional activities, but most important, to promote the muscular balance of the torso.

For pain relief, contracture reduction, increase of range of motion and of muscular tonus, it was appealed to massage therapy, so the players benefited of analgesic and muscle relaxing massage, applied on lumbar column, slow executed, by ample movements, resulting in sedative effect.

Physical education lessons consisted in maintaining of general particularities of each sports game, but also of specific techniques characteristics.

As general particularities, there were considered the compiling of static muscular effort for equilibration, with the muscular effort which provides the fineness moves and techniques, because each biomechanical type of muscular effort cannot be considered separately, but in interdependence.

Static muscular effort is accomplished by muscular groups and chains from the entire body, called “muscles antagonisms game”, able to ensure a balanced and adequate position for each technique from handball game. Thus, in physical education lessons methodic, there were introduced equilibration exercises, to develop equilibration capacity of the body.

Dynamic muscular effort entails a large number of muscular groups and chains, most of the time targeting all the muscles in the body. Characterized by a large variety of movements, in handball game, there were conducted exercises for throwing bounce near the gate and from distance over slips, throwing of the legs, throwing of added step, or on the spot.

Alongside specific elements in handball game there were addressed exercises with general character in order to maintain cardio-respiratory functions, but also to maintain motion qualities (speed, skill, endurance and strength).

Results and discussions: At the final evaluations of the patients, it was found that the range of motion of the players, who benefited from physiotherapeutic treatment and physical education lessons, was increased than the range of motion of the players who benefited of medication and electrotherapeutic treatment only. The muscular strength was significantly increased, the values obtained for study group were increased compared with the ones obtained from control group.

Pain assessment presented minimal values for both study and control group, mentioning that the values obtained for study group are with very little smaller, which proves that physiotherapeutic treatment, is an adjuvant in medication and electrotherapeutic treatment for combating pain, so it cannot be considered itself a treatment for pain. Quality of life index was increased for the group which benefited of physiotherapy and physical education lessons, compared to the control group, attesting the efficiency of the complex rehabilitation program for the improvement of quality of life of patients.

After final evaluation of body weight and body mass index, for study group it has been found that the differences are insignificant, attesting that physical education and physiotherapy elements have an important role in combating rest deconditioning, and for control group there were registered high values for body weight and body mass index at the end of the treatment; the values were compared for the same group and the differences were made between the values obtained at the initial and the final evaluations.

For interpreting, I used graphic method of exposure, comparison and explanation of the results obtained following the application of physiotherapeutic treatment and physical education elements, as follows:

Chart 3 represents muscle evaluation for both study and control groups, obtained through manual testing of muscular strength for

extension (the values for flexion being approximately identical) and pain evaluation using VAS scale, comparative between groups and initial and final values.

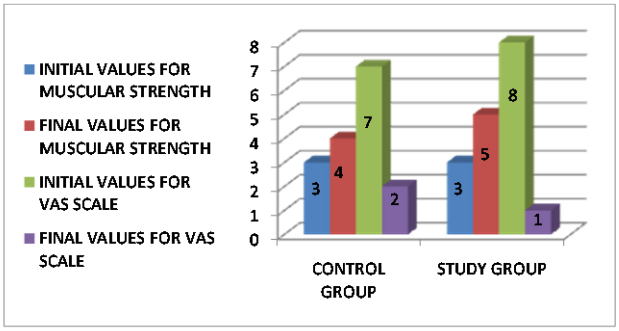

Chart 3 – Muscular evaluation for extension (the values are almost the same for flexion, it has been exposed only the value for extension); VAS scale for pain.

Chart 4 exhibits the initial and the final values for Schober test and for Tomayer index.

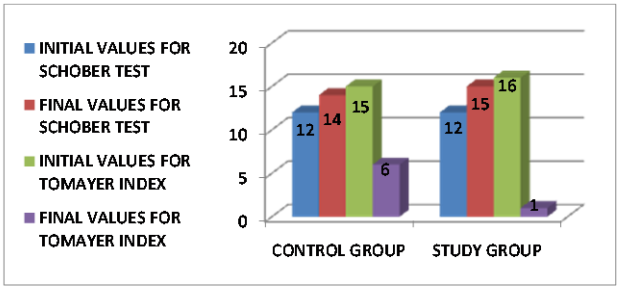

Chart 4 – Schober test and Tomayer index.

Chart 5 shows the differences between final and initial values of body mass index and body weight; for study group the values were normal, and for control group the values were elevated.

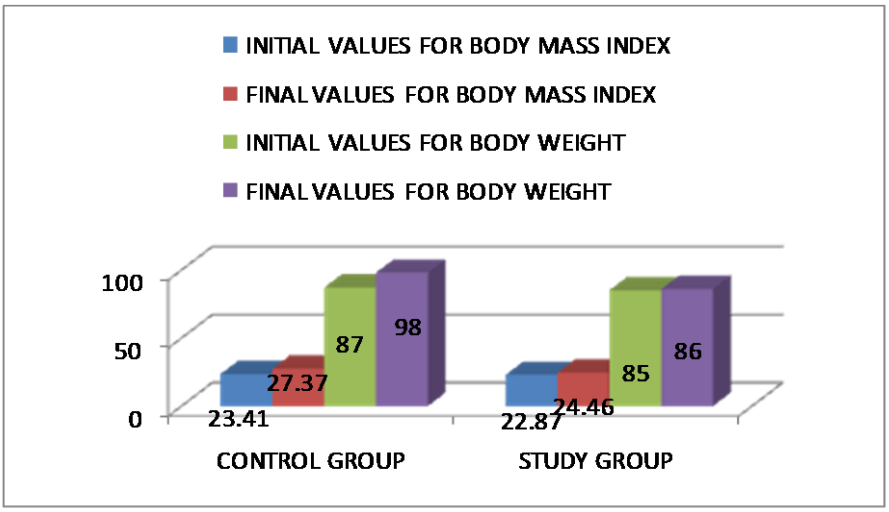

Chart 5 – Body mass index and body weight in kilograms.

Chart 6 presents the values achieved following the LBP-module (Low Back Pain) Questionnaire.

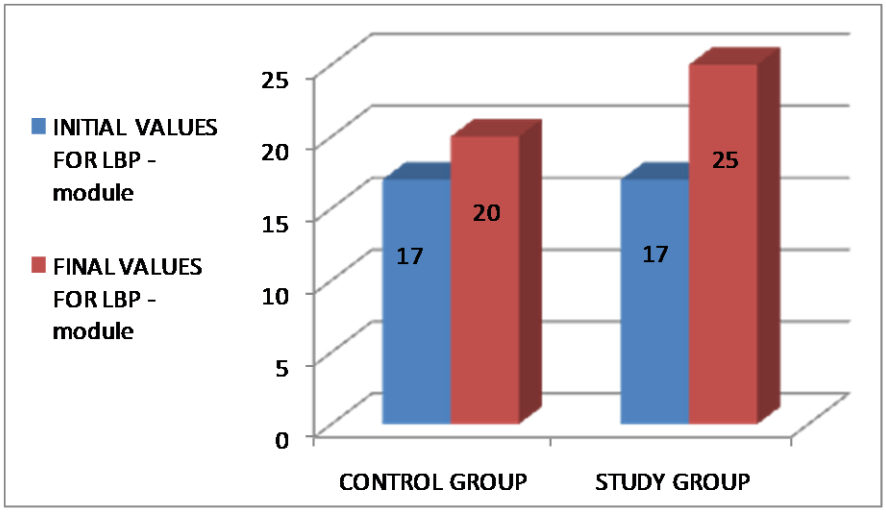

Chart 6 – LBP-module Questionnaire.

The charts were made following the comparison between the values obtained through median and arithmetic mean of the parameters. The compared values are the ones obtained at the initial and the final evaluation, thus being compared the median for each parameter for study group and for control group.

To increase the importance and efficiency of physiotherapeutic program there were compared the final values for control group and for study group. (Chart 7).

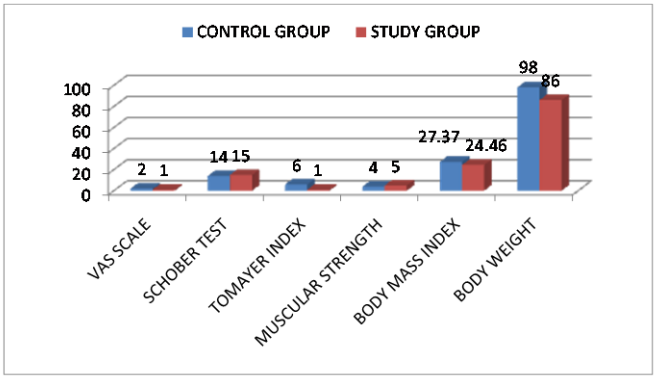

Chart 7 – The comparison between final values for each measured parameter.

Conclusions: According to the results represented in the charts, it can be seen that the range of motion for torso has substantially improved.

Following the physiotherapeutic program and physical education lessons, the players observed the considerable increase of range of motion and regained their functional capacity. In addition, the muscular strength increased also, both for flexion and for extension.

The study highlights that the role of physiotherapy and physical education is a very important one for reintegration in sports activity, and also recreational activities are useful for the recovery.

Observing the increase of quality of life by diminishing the pain and maintaining the players active, due to physical education lessons, it can be seen that physical education elements and physiotherapeutic means are useful for the reintegration of the players in sports activity.

Physical education lessons and physiotherapy, besides the objectives achieved, led to maintenance of effort capacity, optimal body weight, contributing to physical and psychic tonus of the player, resulting in early reintegration of the players in sports activity and prevention of rest deconditioning.

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COMBATEREA DECONDIȚIONĂRII DE REPAUS A HANDBALIȘTILOR DE PERFORMANȚĂ CU LOMBALGIE PRIN MIJLOACE KINETOTERAPEUTICE ȘI DE EDUCAȚIE FIZICĂ

Cuvinte cheie: Fiziokinetoterapie, educație fizică, lombalgie, handbaliști de performanță

Abstract: Lombalgia posttraumatică reprezintă o afecțiune foarte des întâlnită în rândul sportivilor de performanță dar și a altor categorii

profesionale. Deficitul funcțional al coloanei lombare poate cauza sportivului incapacitatea de a participa la antrenamentele sportive și în cazurile mai avansate incapacitatea de autoîngrijire sau de integrare socială.În recuperarea acestor sportivi este foarte importantă colaborarea mai multor specialiști, medicul, fiziokinetoterapeutul, antrenorul, psihologul echipei, suportul întregii echipe și a familiei, toți aceștia ducând la un efect de sumație ce grăbesc apariția rezultatelor favorabile și împiedică apariția depresiei. În acest studiu s-a urmărit evoluția a 39 de sportivi de performanță, handbaliști, împărțiți în două loturi, martor și studiu. După aplicarea tratamentului complex de recuperare și menținerea celor din lotul studiu în activitatea sportivă prin lecții de educație fizică și kinetoterapie, rezultatele obținute au permis susținerea ipotezei conform căreia tratamentul kinetoterapeutic și lecțiile de educație fizică joacă cel mai important rol în recuperarea sportivilor și combaterea decondiționării fizice datorate repausului.