

РЕЗЮМЕТА

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по професионално направление 7.4 Обществено здраве
специалност „Кинезитерапия“ („Кинезитерапия в неврохирургията“)**

I. Монографичен труд

1. Златков, Ю. (2024). Вертебрален синдром- същност и методики. Университетско издателство „Неофит Рилски“, Благоевград, 124стр.

В монографичния труд е разгледана проблема с болките в лумбалната област като се акцентира на вертебралния синдром и кинезитерапевтичните методики за повлияването му.

В началото на монографията са описани същността, етиологията, причините и видовете болки в лумбалната област. Разгледана е възможността за по-ясно отдиференцирането на болките в лумбалната област. Те може да се в резултат на неврологичен (дискова херния, възпаление на n. ischiadicus и др.), мускулен (скъсени ишиокрурална мускулна група или пириформис синдром) и ставен (фемуро-ацетабуларен импийнджънт, кокартроза и дисфункция в сакроилиачните стави) произход. На кратко е описана същността на вертебралния синдром, изразяваща се в болка, намален обема на движение, изгладена физиологична лордоза и ригидност на паравертебралната мускулатура.

В монографичния труд са описани по-често прилаганите тестове за диагностициране на вертебралния синдром. За изследване на коренчево дразнене са проведени следните тестове: Право изпънат крак, Lassegue, Bragard, Neri, Slump тест, точки на Valleux. Състоянието на мускулатурата, отговорна за движенията в лумбалния гръбнак, се проследи чрез статичната част на теста за лумбална дискова херния. Подвижността на лумбалния отдел на гръбначния стълб се тества с динамичната част на същия тест. Степента на болка е разгледана чрез приложението на четири скали за болка- визуално-аналогова скала, скала на Wong- Baker, скала за динамична болка на Merl d'Aubigne и скала за статична болка на Borg. За оценка на функционалното състояние е предложена скала за Кратко мускулно-скелетно функционално оценяване.

Създадени са различни методики за подобряване състоянието на пациентите с лумбален вертебрален синдром. В настоящия монографичен труд са разгледани някои от най-често прилаганите методики при този проблем. Това се методики, които ние прилагаме в различни етапи от нашата практика и при пациенти с вертебрален синдром.

Първата разгледана методика е „Миофасциално манипулиране“. Същността на методиката се състои в обработване на тригерни точки на мускулите *m. gluteus maximus*, *m. gluteus minimus*, *m. gluteus medius*, *m. piriformis* и *m. quadratus lumborum*, прилагане на ПИР, стречинг и автостречинг. Друга методика, разгледана в монографичния труд е тази с балансираща възглавничка. Описани са упражненията, които се прилагат при тази методика като е и обяснен е терапевтичният ефект от приложението им. В монографията е разгледана разработената от нас „Собствената методика при лумбален вертебрален синдром“ с особеностите по обездвижването в първия етап и специализираните упражнения, прилагани във втория и трети етап. Същността на методиката с ERGON IASTM Technique се състои в обработката на дълбоките седалищни и гръбни мускули, както и ишиокруралната мускулатура чрез специфичните за техниката инструменти. Съвременният метод на терапия INFINITY акцентира на коригиращите упражнения. Разгледаните упражнения на Brunkow повлияват на подвижността в лумбалния отдел на гръбначния стълб като въздействат на болката. Въпреки че е създадена през 1950 г, методиката на McKenzie добива популярност през 1985г. Акцент в тази методика са повтарящите се екстензионни упражнения. Упражненията по Williams се прилагат за подобряване на флексията и лумбалната област и силата на глутеалната и абдоминална мускулатура. Методиката на Сугіах включва три техники манипулация, тракция и дълбок фрикционен масаж, като тези техники могат да се прилагат самостоятелно или в комбинация. Rock Pods е съвременна методика, при която се прилагат силиконови вендузи. Терапевтичният ефект от Rock Pods се състои в повлияването на фасцията. Описаните през 2004г от Желев и Лиану упражнения върху swiss ball, продължават да са актуални за терапевтично повлияване на болките в лумбалната област. Иумеихо терапията като вид мануална терапия се прилага успешно за повлияване симптомите на вертебрален синдром. С успех в повлияването на състоянието на пациенти с вертебрален синдром се прилага кинематик тейпинг в областта на *p. ischiadicus* и паравертебралната мускулатура. Незабавен ефект, изразяващ се в релаксиране на мускулатурата се постига чрез приложението на dry needling на мускулите *piriformis*, *gluteus medius*, *gluteus minimus* и *gluteus maximus*.

В заключение може да се обобщи, че лумбалният вертебрален синдром може успешно да се повлияе от съвременни методики. Популяризирането на тези методики, правилният им подбор и приложение са от съществено значение за ефективното възстановяване на засегнатите.

II. Книга по дисертационен труд

1. Златков, Ю. (2024). Специализирана кинезитерапия при дискови протрузии. Печатница Фатум ООД, 104 стр.

Целта на книгата по дисертационен труд „Специализирана кинезитерапия при дискови протрузии“ е да разгледа по- задълбочено теоретичните основи на дисковата протрузия и да представи комбинирани методики на кинезитерапия при дискови протрузии в лумбалната и цервикална област.

Първата част разглежда по-детайлно същността, етиологията и патогенезата на дисковата херния. Главата завършва с представяне на по-често прилаганите техники за повлияване на състоянието на засегнатите от дискови протрузии.

Във втора част е описана „Специализирана кинезитерапия при лумбални дискови протрузии“. Описани се тестове за отдиференциране на дисковата протрузия от болка произлизаща от друго естество. В тази част е разгледана специализираната методика, която разработихме по повод защитата на дисертациония ни труд. С натрупването на знания и опит в кинезитерапията при пациенти с дискова протрузия започнахме да комбинираме различни методики. В тази част от книгата разгледахме комбинирането на собствената методика с упражнения с балансираща възглавничка и комбинирането на собствана методика с ERGON IASTM Technique. Упражненията върху балансираща възглавничка се прилагат във втория етап от разработаната от нас методика. Чрез тях се подобрява обема на движение и се съкращава продължителността на периода с една седмица. ERGON IASTM Technique прилагаме в първия етап от специализираната ни методика. Чрез специализираните инструменти се повлиява дълбоката и повърхностна фасция на мускулите около седалището и лумбалната област като по този начин се повлиява дискомфорта, който изпитват имобилизираните през този период.

Третата част разглежда същността и етиологията на цервикалната дисковата херния. Описани се по-често прилаганите тестове от кинезитерапевтична гледна точка при коренчево дразнене. Разгледани се някои консервативни методи за терапия на цервикални дискови протрузии – тракция, имобилизиране с шийна яка и специализирани упражнения. В тази книга представяме „Специализирана (собствана) методика на кинезитерапия при цервикална дискова протрузия“. При пациенти, които се намират в острия период на цервикални дискови протрузии методиката ни протича в три етапа. Първи етап включва имобилизиране с твърда шийна яка за един месец. През втория етап се прилага стречинг на скъсените мускули, обработка на тригерни точки и коригиране на шийната лордоза. През трети етап се подобрява обема на движение и се укрепват шийните мускули. При пациентите в хроничния период на цервикална дискова протрузия пациентите не се имобилизират. Описаната методика ние съчетаваме с ERGON IASTM Technique и dry needling. ERGON IASTM Technique прилагаме през втория етап от специализираната методика на кинезитерапия при цервикални дискови протрузии. Комбинирането на dry needling в специализираната методика се прилага във втория етап. След прилагането им се отчита релаксиране на мускулите и постигане на аналгетичен ефект.

В заключение може да споделим, че няма „златен стандарт“ при избора на консервативни средства за повлияване на засегнатите от дискови протрузии. За постигането на максимално добри резултати водещ е индивидуалният подход към пациентите. Комбинирането на различни методики води до по-бързо и по-ефективно повлияване на симптомите на дискови протрузии и съкращаване на времето за прилагане на специализираната методика.

III. Публикации и доклади в индексирани и реферирани бази данни

1. Zlatkova, K., Zlatkov, Y., Filipova, M. (2022). Methodology of a kinesitherapy in patients after insertion of a coronary artery stent. Journal of IMAB, vol. 27, pp. 12-14, Supplement 11 SEEC & 31 IMAB, <https://www.journal-imab-bg.org/en/vol-27-Supplement.html>- (WEB OF SCIENCE)

Abstract

Purpose. Cardiovascular diseases are serious socio-economic diseases, widespread and affecting more and more people of working age. The purpose of the study was to investigate the effect of methodology of a kinesitherapy in patients after coronary artery stent insertion. **Material and Methods:** The study included 30 patients who underwent coronary artery stent insertion, divided into two groups (experimental and control) of 15 patients. In the experimental group we apply a methodology of kinesitherapy, including isometric and resistive exercises, and in the control group - standard cardio rehabilitation. **Results:** We reported an improvement in the studied indicators in both groups and this is more significant in the experimental group. **Conclusion:** The methodology applied by us, combining isometric and resistive exercises with elastic bands, is effective, easy to apply and supports the full return to an active lifestyle of those affected.

2. Zlatkov, Y., Zlatkova, K. (2022). Effect of the application of a balance cushion in patients with low back pain. Journal of IMAB, vol. 27, pp. 15-17, Supplement 11 SEEC & 31 IMAB, <https://www.journal-imab-bg.org/en/vol-27-Supplement.html> – (WEB OF SCIENCE)

Abstract

Purpose. Low back pain is very common and is one of the most important musculoskeletal causes of limited activity and lack of work worldwide. The purpose of the study was to follow the effect of the application of exercises on a balance cushion in patients with low back pain. **Materials and Methods.** The study included 30 people with lumbar pain. We apply the following tests to patients: pain assessment, Schober test, lateral inclinations, Straight leg raise test, Neri's test and symptom of the button. The therapy consists of exercises on a balance cushion for a period of 1 month. **Results.** We observe an improvement in the indicators after the therapy. **Conclusion.** The present study proved the effectiveness of the applied methodology, expressed in the treatment of pain symptoms and mobility in the lumbar spine in a shorter time.

3. Zlatkova, K., Zlatkov, Y. (2022). ERGON Technique for the therapy of a Plica syndrome. Journal of IMAB - Annual Proceeding (Scientific Papers) 2022 Supplement 12 SEEC & 32 IMAB, 28: 47-49, <https://www.journal-imab-bg.org/issues-2022/Supplement/2022-Supplement3-Varia.pdf> (WEB OF SCIENCE)

Abstract

Purpose: The etiology of knee pain can be associated with various causes. One of the causes is synovial Plica syndrome. **Material and Methods:** We have included 5 athletes from the

national taekwondo ITF team of the of Bulgaria. We made the following measurements: centimetry, pain assessment and specialized tests. We apply Ergon technique in the treatment of synovial plica of the knee. **Results.** The mean degree of pain on the visual analogue pain scale before therapy was 3.8 ± 0.84 , and after that athletes did not report pain. The measured mean centimeters before Ergon therapy were: above the patella was 40.40 ± 3.77 cm, in the midpatella were 37.7 ± 2.73 cm, and below the patella was 35.2 ± 3.21 cm. After the applied therapy, the average values are the same as in a healthy leg, with a difference of up to 0.5 cm. We applied four specialized tests for the detection of Plica Syndrome, which before the therapy were positive, and after it - negative. **Conclusion.** The use of Ergon technique is effective and improves the opportunities of sports therapists for adequate and timely impact of athletes' injuries by helping them return to active competitive activity.

4. Zlatkov, Y., Zlatkova, K. (2022). Methodology of kinesitherapy for disc protrusion in the cervical region, *Journal of IMAB - Annual Proceeding (Scientific Papers) 2022 Supplement 12 SEEC & 32 IMAB*, 28: 50-52, <https://www.journal-imab-bg.org/issues-2022/Supplement/2022-Supplement3-Varia.pdf> (WEB OF SCIENCE)

Abstract

Purpose: Neck pain is common in the modern world. One of the causes of neck pain is disc protrusion. The purpose of the study is to create a methodology for conservative therapy in patients with cervical disc protrusion and to track the effect of its application. **Material and Methods:** The study included 10 patients with cervical disc protrusions. Before and after the treatment we applied the following tests: visual analogue scale (VAS), Neck disability index and Specialized tests (Spurling test, Distraction test, Abduction test). **Results:** We report an improvement in both the specialized cervical radiculopathy tests performed, as well as the visual analog scale and the NDI. **Conclusion:** The methodology of kinesitherapy for disc protrusions in the cervical vertebrae developed by us is effective and reliable. It is easy to apply and leads to long-lasting results. From the presented results, it is clear that after the therapy, the patients have no pain and the symptoms characteristic of disc protrusions subside.

5. Zlatkova K, Zlatkov Y. (2023). Exercises on a balance cushion to influence of lumbar vertebral syndrome [version 1; peer review: awaiting peer review]. *F1000Research* 2023, 12:508 (<https://doi.org/10.12688/f1000research.131921.1>) (SCOPUS- Q1)

Abstract

Background: The pain in the lumbar region is common. One of the causes of low back pain is lumbar vertebral syndrome. There is a wide range of options for treating low back pain. The purpose of the study is to describe exercises on a balance cushion to influence the pain in lumbar vertebral syndrome and to track the effect of their application.

Methods: We studied 20 participants with low back pain. We applied the following tests to the patients: visual analogue scale, Schober test, measurement of lateral flexion and Straight leg raise test. The methodology includes exercises on a balance cushion. We performed manual

manipulation techniques on each patient by treating trigger points in the lower back and buttocks once a week.

Results: We achieved an improvement in the studied indicators after the applied therapy, which was expressed in a reduction of pain and restoration of normal mobility in the lumbar region.

Conclusions: The application of exercises on a balance cushion allows in a short time to affect the pain and mobility in the lumbar spine to fully perform their work and professional activities.

IV. Публикации и доклади в нереферирани списания с научно рецензиране

- 1. Zlatkov, Y. (2019). Differentiation of the pain in the lumbosacral region, Knowledge International Journal, 35.4:1185-1187, ISSN 2545 – 4439**

Abstract

The pain in the lumbosacral region is a very common and socially important problem. It is established that 90% of the population aged between 35 and 50 years of age are suffering from a certain discomfort in the lumbosacral region. The pain in this region can be of a different nature-neurological, traumatic, psychological, etc. Determining the type and location of pain in the lumbosacral region helps to diagnose correctly, which aids to choose the right treatment. The aim of this research is to define the nature of lumbar pain in patients that visited, for 1 month, the kinesitherapy laboratory at SWU "Neofit Rilski," Blagoevgrad, and after we analyzed the results, we could determine the kinesitherapy approach. In this research took part 30 patients (16 male and 14 female), which had pain in the lumbosacral region, at an average age of 45.37 ± 2.61 years. We used the following tests, in order to determine the nature of the pain in the lumbosacral region: Straight leg raise test, Bragard test, and a test to assess femoroacetabular impingement (FADIR Test). One of the most common tests is the Straight leg raise test. Its proper execution and interpretation can lead to a correct diagnosis of the pain in the lumbar region. We performed the Straight leg raise test, during the examination of every patient. The pain in the lumbar region, provoked by the test, from 30° to 70° is a prove for disc lesion, while above 70° -for problem in the sacroiliac joints. We applied, on some of the subjects, additional stress by performing dorsiflexion (Bragard test). After performing the Straight leg raise test, we determined that 7 of the patients have low back pains connected with the muscles nature, 7 have problems with the sacroiliac joints, and 10 of them are in pain in the lumbar region caused by disc lesion. The test was negative in 6 of the participants. We performed on them additional test for femoroacetabular impingement (FADIR test) which was positive. It could mean starting cause for the beginning of early osteoarthritis of the hip. Recommendations were given to each group for the kinesitherapy approach needed in order for the therapy to be successful. After the recommendations, we followed-up on their condition by performing the tests again and it was determined that there is an improvement in the condition of the patients. In conclusion, we can summarize, the differentiation of the pain in the lumbosacral region, allows us to choose proper kinesitherapeutic means which can lead to control of the pain in that region. That's why, it is necessary to know, apply and interpret correctly the basic tests used to determine the nature of the discomfort in the lumbosacral region.

2. Zlatkov, Y. (2020). Characteristics of lumbar pain, Knowledge International Journal 41.3:545-550, ISSN 2545-4439

Резюме

Болките в лумбалната област се често срещан медицински проблем, засягащ хора от различни възрасти, пол и раса. Данни сочат, че се засягат все по-чести млади лица, като са доказани случаи на дисковахерния при пациенти на 12 години. Болките в лумбалната област могат да бъдат от различно естество-травматично, неврологично, дегенеративно и психологично. Статистически данни показват, че 70-80 % от хората са имали някакви болки в кръста в даден момент от живота си. Според някои автори при 85% от пациентите с тази болка не може да бъде установена окончателна причина поради слабата връзка между симптомите и резултатите от диагностичните изображения, а други съобщават, че случаи болката в долната част на гърба може да се отдаде на специфичен генератор на болка, със собствени характеристики и с различна терапевтична възможност. В зависимост от протичането някои автори описват болката в кръста като остра, подостра, рекурентна и хронична. Болките в кръста се определят от експерти като „епидемия“ в съвременния свят. Данни от изследвания в областта сочат, че хора, имащи епизоди на болки в кръста често ги повтарят (24%-33%). Някои автори съобщават, че болката в долната част на гърба често се причинява от непатологични функционални нарушения. Болките невинаги са свързани с определена възраст и пол -страдат млади и по-възрастни хора, жени и мъже. Епидемиологичните проучвания показват, че болестността е около 30%, като нараства от 30-годишна възраст нататък, за да достигне своя максимум около 55 – 64 години. Поради неправилно лечение на острата идиопатична болка в кръста, неправилна работна поза, слаба мускулатура, хронично претоварване на кръста болката може да хронифицира. Хронифицирането на заболяването довежда до развитие на дегенеративни промени в интервертебралните стави и дегенерация на прешлените. Голямата честота на поява на болките в кръста и трудното отдиференциране на тяхната етиология е дало основание те да бъдат наречени синдром на low back pain (болки в кръста). Една от причината за разпространението на болките в лумбалната област е начинът на живот- липсата на физическа активност, която води до детренираност на мускулите, които поддържат гръбначния стълб. Заболяванията на гръбнака довеждат до спонтанна болка, стегнатост, ограничения на движенията, деформации и различни неврологични симптоми. Според патофизиологичните механизми, които я предизвикват, болката бива ноцицептивна или невропатна. Ноцицептивната болка е локална и възниква в резултат на активиране на ноцицепторите от увреждащи стимули. Невропатната болка възниква директно вследствие на лезия или заболяване, засягащо соматосензорната нервна система. Лицата с болки в лумбалната област се групират в 4 групи според терапевтичния подход, на които подлагат. Болките в лумбалната област се характеризират с различна причини и продължителност. Многообразието от причини за болката в лумбалната област са свързани с различен терапевтичен подход. Знанията относно характеризирането на болката в лумбалната област ни позволява да приложим адекватни терапевтични средства, а това да доведе до добро повлияване на болката.

- 3. Златкова, К., Цветкова- Габерска, М., Филипова, М., Златков, Ю. (2021). Тестова батерия за определяне на кинезитерапевтичен потенциал при пациенти преживели SARS-COV-2 инфекция, Юбилейна научна конференция с международно участие: "Предизвикателства пред общественото здраве", ЮЗУ " Н. Рилски", Благоевград, Унив. изд. "Неофит Рилски", 2021, Благоевград, стр.315-321, ISBN - 978-954-00-0304-7, Национален референтен списък № 4646**

Резюме

Коронавирусната болест (COVID-19) е заболяване, причинено от инфекция с новия коронавирус (тежък остър респираторен синдром коронавирус 2 [SARS-CoV-2]). Целта на проучването е да се изготви тестова батерия за определяне състоянието на пациенти след прекаран SARS-CoV-2, подходяща за прилагане в кинезитерапевтичната практика. **Изложение.** При пациенти в стабилно състояние Zhu et al. (2020) предлагат да се проследят основни жизнени показатели; обем на движение, степента на диспнея; определяне на мускулна сила; способност за баланс; физическа сила и издръжливост при упражнения и наличие на тревожност или депресия. Sweeney et al. (2021) препоръчват за определяне на физиотерапевтичната оценка да се използва дихателен и хемодинамичен статус, когнитивност, обем на движение, сила и издръжливост. Ние сме на мнение, че при тестване на пациенти прекарвали SARS-CoV-2 за определяне състоянието на дихателната система е необходимо да се включат дихателни проби (Фланг- Щанге; Генчи-Сабразе; Проба с продължително броене; Хирц 1, Хирц 2, Хирц 3). При определянето на издръжливостта и функционирането на кардиореспираторната система предлагаме да се изпълни 6 минутния тест с ходене. Функционалните възможности на пациентите проследяваме с Timed Up and Go (TUG) тест. Според нас е удачно да се използва генеричен въпросник за оценяване качеството на живот при този тип контингент като Medical Outcomes Study Short Form 36 (SF-36). **Заключение.** Коронавирусната инфекция е съвременно заболяване, засягащо целия организъм. Определянето на кинезитерапевтичния потенциал на пациентите е от съществено значение при прилагане на рехабилитационните процедури. Ето защо е необходимо да се изготви и интегрира единен протокол при пациенти след прекаран SARS-CoV-2, чрез който да се проследява психо-емоционалното състояние на пациентите.

- 4. Цветкова- Габерска, М., Златкова, К., Златков, Ю., Филипова, М. (2021). Обзорен преглед на кинезитерапевтичните програми при пациенти след коронавирусна инфекция, Юбилейна научна конференция с международно участие: "Предизвикателства пред общественото здраве", ЮЗУ " Н. Рилски", Благоевград, Унив. изд. "Неофит Рилски", 2021, Благоевград, ISBN - 978-954-00-0304-7, стр. 322-331, Национален референтен списък № 4646**

Резюме

Коронавирусната инфекция - 2019 (COVID-19) създаде голямо предизвикателство пред специалистите по физиотерапия, рехабилитация и кинезитерапия. Епидемичното разпространение на болестта и възможността от засягане на няколко физиологични системи в организма, както и краткосрочните и дългосрочни промени върху физическото

и психическо състояние на пациентите, налагат определянето на етапи за прилагане на конкретни и оптимални рехабилитационни и кинезитерапевтични (КТ) програми. Прегледа на литературните данни показва, че има условно разделяне на основните етапи: - прилагане на кинезитерапия при леки и умерени случаи без хоспитализация; - прилагане на кинезитерапия при хоспитализирани пациенти с COVID-19; - прилагане на кинезитерапия след интензивно лечение в реанимация и след изписване от болница. Нуждите и възможностите на пациентите във всеки един от етапите е различен, което налага да се използват подходящи КТ програми, с цел възстановяване на физическата и кардиореспираторната функция, намаляване на тревожността и депресията, най-вече при пациентите със съпътстващи заболявания. Тази обобщена информация би дала насоки за правилната работа на терапевтите, чиято основна роля е пълното функционално възстановяване на пациентите и връщането им към нормален начин на живот.

5. Пенчов, Г., Златков, Ю. (2021). Изследване на травматизма при състезатели от националния отбор по таекуондо ITF, Юбилейна научна конференция с международно участие: "Предизвикателства пред общественото здраве", ЮЗУ " Н. Рилски", Благоевград, Унив. изд. "Неофит Рилски", 2021, Благоевград, ISBN - 978-954-00-0304-7, стр. 336-341, Национален референтен списък № 4646

Резюме

Таекуон-до ITF е Корейско бойно изкуство за самозащита, което се фокусира върху удари с крак на височина на главата, въртене и отскачане. Въпреки възприеманата физическа полза за всички възрасти, практикуването на таекуондо може да причини различни видове травми. Травмите в таекуондото могат да се групират в 2 категории: кумулативни травми (хронични) и остър травматизъм. **Целта** на настоящият доклад е да съобщи по-често срещаните травми, получени от състезателите от националния отбор по таекуон-до ITF по време на подготвителния лагер. **Методи.** В настоящото изследване сме включили 26 състезателя (мъже и жени) от националния отбор по таекуондо ITF. На състезателите са проведени следните изследвания за определяне на травматизма: сантиметрия, ъглометрия, тестове за плика синдром и колянна нестабилност, визуално-аналогова скала (BAS). **Резултати.** Установени са следните травми: 5 състезатели с Плика синдром; 1- синдром на бегача; 2 с дисторзио на глезена; 8 са със спазъм на m. gluteus medius; 1 -засилен m. vastus medialis; 2 спазъм на флексорите в ТБС; 2- плантарен фасцит ; 1 - спазъм на m. flexor pollicis longus; 70% проблем с плантарните флексори. **Заключение.** Таекуондо ITF е малко изследван спорт. Описването на травмите, получени по време на подготвителния лагер разширява познанията в този спорт. От съществено значение за кинезитерапевтите в различни спортни отбори е да възстановят състезателите за участие в състезание. Споделянето на опитът от лечението на травмите би спомогнало и на други специалисти да се справят с подобен травматизъм и в други спортове.

6. Tsvetkova-Gaberska, M., Zlatkova, K., Zlatkov, Y. (2022). Assessment of physiotherapeutic potential and rehabilitation of patients post COVID-19 infection, , pp. 176-183, 6th INTERNATIONAL CONFERENCE ON COVID-19

Abstract

Coronavirus infection-2019 (COVID-19) has emerged as a great challenge for specialists in physiotherapy, rehabilitation, and kinesitherapy. The epidemic spread of the disease and the risk of affecting several physiological systems in the body, as well as short term and long-term changes in the physical and mental condition of patients, require the definition of stages for specific and optimal rehabilitation and physiotherapy programs. Selecting appropriate tests and preparing an effective testing protocol are very important in order to provide information about the functional status of the patients. In this regard, we propose several important points in testing patients who have post Covid19 infection to determine the condition of their respiratory system by using the following tests: Flange-Stange; Genchi-Sabraze; Prolonged count sample; Hirz 1, 2, 3; to determine the endurance and functioning of the cardiorespiratory system: a 6-minute walk test, Timed Up and Go (TUG) test, and a Medical Outcomes Study Short Form 36 (SF-36) -generic questionnaire to assess the quality of life. This test battery allows the precise determination of the physiotherapeutic potential of patients who have been discharged from intensive care hospital units. On the other hand, it will help and guide therapists' work to select appropriate and individual rehabilitation programs for the full functional recovery of patients and their return to normal daily activities.

7. Zlatkova K, Zlatkov Y. (2023). 6MWT in Patients after Coronary Artery Stenting, Varna Medical Forum, 12; 65-68. <https://journals.mu-varna.bg/index.php/vmf/article/view/9197/8075#>, ISSN 1314-8338 (Print), ISSN 2367-5519 (Online); национален референтен номер № 693

Резюме

Шестминутният тест с ходене (6MWT) е лесно възпроизводимо изследване, при което се определя реакцията на организма при субмаксимално натоварване. Тестът е широко приложим. Целта на настоящия доклад е да анализира резултатите от проведения 6MWT при пациенти след стентирание на коронарните артерии. В проучването са включени 30 пациенти, разпределени в две групи по 15 според кинезитерапията, която им е прилагана. В първата група (контролна) прилагаме стандартна кинезитерапия за пациенти със сърдечносъдови заболявания. При пациентите от втората група (експериментална) прилагаме специализирана кинезитерапевтична програма, включваща изометрични и резистивни упражнения. **Резултати:** Изчислени са средна стойности и стандартно отклонение на изминатото разстояние, кислородната сатурация, артериалното налягане и сърдечната честота. Изминатото разстояние при контролната група се е подобрило със 78.5 м, а при експерименталната група с 83.5 м. Наблюдаваме по-плавно повишаване на артериалното налягане и при двете групи след проведената терапия. Кислородната сатурация при експерименталната група е 94.27 в началото на изследването и 94.60 в края му, а при контролната група 94.67 (в началото) и 94.53 (в края). Степента на задух по скалата на Borg при пациентите от контролната група в началото на проучването е 2, а след това 0.4. При пациентите от експерименталната група степента на задух е 1.1 (преди проведената кинезитерапия) и 0.17 (след проведената кинезитерапия).

Заклучение: Шестминутният тест с ходене е лесен метод за оценка на реакциите на организма към натоварванията във всекидневието. От анализиранияте резултати от теста преди и след проведена кинезитерапия става ясно, че се подобрява издръжливостта на изследваните лица, което свидетелства за подобряване на качеството им на живот.

8. Zlatkova K, Zlatkov Y. (2023). Centimetry in patients with cardiovascular diseases, Conference Proceedings-FOURTH INTERNATIONAL CONFERENCE - Health care - a contribution to the quality of life, June 9-10, 2023; 313-317, <https://journals.mu-varna.bg/index.php/conf/article/view/9502> -

Резюме

Въведение. Сърдечно-съдовите заболявания се отразяват негативно на засегнатите. В нашата страна двама от всеки трима души загиват от сърдечно-съдови заболявания. Сантиметрията е лесно приложим метод за измерване. Установена е връзката между някои от по-високите измерени стойности чрез сантиметрия и наличието на заболявания на сърдечно-съдовата система. **Целта** на настоящият доклад е да представи измерените стойности чрез сантиметрия при пациенти след инсерция на коронарен артериален стент и да се анализират резултатите, съпоставяйки ги с литературни данни. **Материали и методи.** Използвали сме сантиметър. Измерили сме обиколките на талия и ханш, както и височината на пациентите. На базата на получените стойности в см изчислихме съотношенията: талия/ханш, талия/височина и индекс за коремен обем (AVI). **Резултати и дискусия.** За обработката на резултатите използвахме статистически пакет Graph Pad Prism 3.0. Изчислили сме средно аритметично и стандартно отклонение при изследваните показатели. Изследвали сме 30 пациента след инсерция на коронарните артерии. Средните стойности от измерването на ханша са $113,05 \pm 8,19$ см. Средните стойности от измерването на талията са $96,67 \pm 8,47$ см. Средното съотношение талия/ханш е $0,86 \pm 0,04$. Средното съотношение талия/височина е $0,56 \pm 0,04$. Изчислените средни стойности от индексът за коремен обем (AVI) са $18,85 \pm 3,19$. **Заклучение.** Изчисляването на обиколките и произлизащите от тях съотношения могат да се използват като оценка на рискът от развитието на сърдечно-съдови заболявания. Навременното откриване на повишените стойности би позволило да се вземат адекватни мерки за промяна на начина на живот, които да противодействат на рискът от развитието на сърдечно-съдови заболявания.

9. Zlatkov, Y., Zlatkova, K. (2023). Training program first stage in the recovery of an athlete (swimmer) after myocarditis - a case report. Book of Proceedings XXIV Scientific Conference „FIS COMMUNICATIONS 2023“; 185-189. ISBN: 978-86-81474-28-0

Abstract

The coronavirus infection can affect different organs and systems. One of the most common complications are myocarditis. Swimming is a sport that requires good functioning of the respiratory and cardiovascular systems. Monitoring the response of the cardiovascular system to exercise can be followed with various tests such as the treadmill test, the Martinet test and

the Lean test. The purpose of this report is to present a program for restoring the functional capabilities of the cardiovascular system in an athlete (swimmer). The program we implement includes running and climbing stairs. The duration of the applied program is 17 days. During the first 8 days, the load includes running 2 km, and climbing 63 steps with a height of 14 cm. During the remaining 9 days, the subject runs 5 km and climbing of 126 steps. The heart rate is monitored before training, immediately after it and in the first, second and third minutes. The time for which the distance is covered is also tracked. Before the intensive training, the ejection fraction was 60%, and then – 62%. According to the treadmill test, the patient recovered the values of arterial pressure and heart rate at the 4th minute. The applied Martinet test shows a recovery of the values again at the 4th minute. In the Lian test, the score equates to poor cardiovascular health. The application of running exercises and exercises on stairs leads to adequate training of the cardiovascular system. The functional condition and endurance to load improves

THE ABSTRACTS

**of the scientific publication of Chief Assistant Professor Yuliyana Delcheva
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by professional direction 7.4 Public health

specialty "Kinesitherapy" ("Kinesitherapy in neurosurgery")

I. Monograph

- 1. Zlatkova, Y. (2024). Vertebral syndrome - essence and methods. "Neofit Rilski" University Publishing House, Blagoevgrad, 124 pages.**

The monographic work examines the problem of pain in the lumbar region, emphasizing the vertebral syndrome and the kinesitherapeutic methods for influencing it.

At the beginning of the monograph, the nature, etiology, causes and types of pain in the lumbar region are described. The possibility of more clearly differentiating the pains in the lumbar region was considered. They can be the result of neurological (disc herniation, inflammation of the n. ischiadicus, etc.), muscular (shortened ischio-crural muscle group or piriformis syndrome) and articular (femur-acetabular impingement, coxarthrosis and dysfunction in the sacroiliac joints) origin. The essence of the vertebral syndrome is briefly described, expressed in pain, reduced range of motion, smoothed physiological lordosis and rigidity of the paravertebral musculature.

The monographic work describes the most frequently applied tests for the diagnosis of vertebral syndrome. The following tests were performed to investigate root irritation: Straight leg extension, Lassegue, Bragard, Neri, Slump test, Valleux points. The condition of the muscles responsible for the movements in the lumbar spine is tracked through the static part of the lumbar disc herniation test. The mobility of the lumbar spine is tested with the dynamic part of the same test. The degree of pain was examined by the application of four pain scales - visual analogue scale, Wong-Baker scale, Merl d'Aubigne dynamic pain scale and Borg static pain scale. A scale for Short Musculoskeletal Functional Assessment has been proposed to assess functional status.

Different methods have been created to improve the condition of patients with lumbar vertebral syndrome. In the present monographic work, some of the most frequently applied methods for this problem are considered. These are methods that we apply in various stages of our practice and in patients with vertebral syndrome. The first technique discussed is Myofascial Manipulation. The essence of the methodology consists in processing trigger points of the muscles m. gluteus maximus, m. gluteus minimus, m. gluteus medius, m. piriformis and m. quadratus lumborum, application of PIR, stretching and autostretching. Another method discussed in the monographic work is that with a balance cushion. The exercises that are applied in this methodology are described and the therapeutic effect of their application is explained. The monograph examines the "Own methodology for lumbar vertebral syndrome" developed by us with the features of immobilization in the first stage and the specialized exercises applied in the second and third stages. The essence of the methodology with the ERGON IASTM

Technique consists in the treatment of the deep gluteal and back muscles, as well as the ischiocrural muscles through the technique-specific tools. The modern INFINITY therapy method emphasizes corrective exercises. The Brunkow exercises discussed affect mobility in the lumbar spine by affecting pain. Although it was created in 1950, the McKenzie method gained popularity in 1985. The emphasis of this methodology is the repetitive extension exercises. Williams exercises are used to improve lumbar flexion and gluteal and abdominal muscle strength. The Cyriax methodology includes three techniques manipulation, traction and deep friction massage, and these techniques can be applied alone or in combination. Rock Pods is a modern technique that uses silicone suction cups. The therapeutic effect of Rock Pods consists in influencing the fascia. The swiss ball exercises described in 2004 by Zhelev and Lianu continue to be relevant for the therapeutic impact of pain in the lumbar region. Yumeiho therapy as a type of manual therapy has been successfully applied to affect the symptoms of vertebral syndrome. Kinematic taping in the area of n is applied with success in influencing the condition of patients with vertebral syndrome. ischiadicus and the paravertebral musculature. An immediate effect, expressed in muscle relaxation, is achieved through the application of dry needling of the piriformis, gluteus medius, gluteus minimus and gluteus maximus muscles.

In conclusion, it can be summarized that the lumbar vertebral syndrome can be successfully affected by modern methods. The popularization of these methods, their proper selection and application are essential for the effective recovery of those affected.

II. Dissertation book

1. Zlatkov, Y. (2024). Specialized kinesitherapy for disc protrusions. Fatum Printing House OOD, 104 pages.

The purpose of the dissertation book "Specialized kinesitherapy for disc protrusions" is to examine in more depth the theoretical foundations of disc protrusion and to present combined methods of kinesitherapy for disc protrusions in the lumbar and cervical region.

The first part examines in more detail the nature, etiology and pathogenesis of disc herniation. The chapter concludes with a presentation of the more commonly applied techniques to influence the condition of those affected by disc protrusions.

In the second part, "Specialized kinesitherapy for lumbar disc protrusions" is described. Tests have been described to differentiate disc protrusion from pain of another nature. This part examines the specialized methodology that we developed for the defense of our dissertation work. With the accumulation of knowledge and experience in kinesitherapy for patients with disc protrusion, we began to combine different methods. In this part of the book we looked at combining own technique with balance cushion exercises and combining own technique with ERGON IASTM Technique. Exercises on a balance cushion are applied in the second stage of the methodology developed by us. Through them, the volume of movement is improved and the duration of the period is shortened by one week. We apply the ERGON IASTM Technique in the first stage of our specialized methodology. Through the specialized instruments, the deep and superficial fascia of the muscles around the buttock and the lumbar area are affected, thereby affecting the discomfort experienced by the immobilized during this period.

The third part examines the nature and etiology of cervical disc herniation. The most frequently applied tests from a kinesitherapeutic point of view for root irritation are described. Some conservative methods for the therapy of cervical disc protrusions were considered - traction, immobilization with a cervical collar and specialized exercises. In this book we present "Specialized (own) methodology of kinesitherapy for cervical disc protrusion". For patients who are in the acute period of cervical disc protrusions, our methodology proceeds in three stages. The first stage involves immobilization with a hard cervical collar for one month. During

the second stage, stretching of shortened muscles, treatment of trigger points and correction of cervical lordosis are applied. During the third stage, the range of motion is improved and the neck muscles are strengthened. For patients in the chronic period of cervical disc protrusion, patients are not immobilized. We combine the described methodology with ERGON IASTM Technique and dry needling. We apply ERGON IASTM Technique during the second stage of the specialized methodology of kinesitherapy for cervical disc protrusions. The combination of dry needling in the specialized methodology is applied in the second stage. After their application, muscle relaxation and an analgesic effect are reported.

In conclusion, we can say that there is no "gold standard" in the selection of conservative means to influence those affected by disc protrusions. In order to achieve the best possible results, the individual approach to patients is the leading one. Combining different methods leads to a faster and more effective impact on the symptoms of disc protrusions and shortens the time for applying the specialized method.

III. Publications and reports in indexed and referenced databases

- 1. Zlatkova, K., Zlatkov, Y., Filipova, M. (2022). Methodology of a kinesitherapy in patients after insertion of a coronary artery stent. Journal of IMAB, vol. 27, pp. 12-14, Supplement 11 SEEC & 31 IMAB, <https://www.journal-imab-bg.org/en/vol-27-Supplement.html>- (WEB OF SCIENCE)**

Abstract.

Purpose. Cardiovascular diseases are serious socio-economic diseases, widespread and affecting more and more people of working age. The purpose of the study was to investigate the effect of methodology of a kinesitherapy in patients after coronary artery stent insertion. **Material and Methods:** The study included 30 patients who underwent coronary artery stent insertion, divided into two groups (experimental and control) of 15 patients. In the experimental group we apply a methodology of kinesitherapy, including isometric and resistive exercises, and in the control group - standard cardio rehabilitation. **Results:** We reported an improvement in the studied indicators in both groups and this is more significant in the experimental group. **Conclusion:** The methodology applied by us, combining isometric and resistive exercises with elastic bands, is effective, easy to apply and supports the full return to an active lifestyle of those affected.

- 2. Zlatkov, Y., Zlatkova, K. (2022). Effect of the application of a balance cushion in patients with low back pain. Journal of IMAB, vol. 27, pp. 15-17, Supplement 11 SEEC & 31 IMAB, <https://www.journal-imab-bg.org/en/vol-27-Supplement.html> – (WEB OF SCIENCE)**

Abstract

Purpose. Low back pain is very common and is one of the most important musculoskeletal causes of limited activity and lack of work worldwide. The purpose of the study was to follow the effect of the application of exercises on a balance cushion in patients with low back pain. **Materials and Methods.** The study included 30 people with lumbar pain. We apply the following tests to patients: pain assessment, Schober test, lateral inclinations, Straight leg raise test, Neri's test and symptom of the button. The therapy consists of exercises on a balance cushion for a period of 1 month. **Results.** We observe an improvement in the indicators after

the therapy. **Conclusion.** The present study proved the effectiveness of the applied methodology, expressed in the treatment of pain symptoms and mobility in the lumbar spine in a shorter time.

- 3. Zlatkova, K., Zlatkov, Y. (2022). ERGON Technique for the therapy of a Plica syndrome. Journal of IMAB - Annual Proceeding (Scientific Papers) 2022 Supplement 12 SEEC & 32 IMAB, 28: 47-49, <https://www.journal-imab-bg.org/issues-2022/Supplement/2022-Supplement3-Varia.pdf> (WEB OF SCIENCE)**

Abstract

Purpose: The etiology of knee pain can be associated with various causes. One of the causes is synovial Plica syndrome. **Material and Methods:** We have included 5 athletes from the national taekwondo ITF team of the of Bulgaria. We made the following measurements: centimetry, pain assessment and specialized tests. We apply Ergon technique in the treatment of synovial plica of the knee. **Results.** The mean degree of pain on the visual analogue pain scale before therapy was 3.8 ± 0.84 , and after that athletes did not report pain. The measured mean centimeters before Ergon therapy were: above the patella was 40.40 ± 3.77 cm, in the midpatella were 37.7 ± 2.73 cm, and below the patella was 35.2 ± 3.21 cm. After the applied therapy, the average values are the same as in a healthy leg, with a difference of up to 0.5 cm. We applied four specialized tests for the detection of Plica Syndrome, which before the therapy were positive, and after it - negative. **Conclusion.** The use of Ergon technique is effective and improves the opportunities of sports therapists for adequate and timely impact of athletes' injuries by helping them return to active competitive activity.

- 4. Zlatkov, Y., Zlatkova, K. (2022). Methodology of kinesitherapy for disc protrusion in the cervical region, Journal of IMAB - Annual Proceeding (Scientific Papers) 2022 Supplement 12 SEEC & 32 IMAB, 28: 50-52, <https://www.journal-imab-bg.org/issues-2022/Supplement/2022-Supplement3-Varia.pdf> (WEB OF SCIENCE)**

Abstract

Purpose: Neck pain is common in the modern world. One of the causes of neck pain is disc protrusion. The purpose of the study is to create a methodology for conservative therapy in patients with cervical disc protrusion and to track the effect of its application. **Material and Methods:** The study included 10 patients with cervical disc protrusions. Before and after the treatment we applied the following tests: visual analogue scale (VAS), Neck disability index and Specialized tests (Spurling test, Distraction test, Abduction test). Results: We report an improvement in both the specialized cervical radiculopathy tests performed, as well as the visual analog scale and the NDI. **Conclusion:** The methodology of kinesitherapy for disc protrusions in the cervical vertebrae developed by us is effective and reliable. It is easy to apply and leads to long-lasting results. From the presented results, it is clear that after the therapy, the patients have no pain and the symptoms characteristic of disc protrusions subside.

5. Zlatkova K, Zlatkov Y. (2023). Exercises on a balance cushion to influence of lumbar vertebral syndrome [version 1; peer review: awaiting peer review]. *F1000Research* 2023, 12:508 (<https://doi.org/10.12688/f1000research.131921.1>) (SCOPUS- Q1)

Abstract

Background: The pain in the lumbar region is common. One of the causes of low back pain is lumbar vertebral syndrome. There is a wide range of options for treating low back pain. The purpose of the study is to describe exercises on a balance cushion to influence the pain in lumbar vertebral syndrome and to track the effect of their application.

Methods: We studied 20 participants with low back pain. We applied the following tests to the patients: visual analogue scale, Schober test, measurement of lateral flexion and Straight leg raise test. The methodology includes exercises on a balance cushion. We performed manual manipulation techniques on each patient by treating trigger points in the lower back and buttocks once a week.

Results: We achieved an improvement in the studied indicators after the applied therapy, which was expressed in a reduction of pain and restoration of normal mobility in the lumbar region.

Conclusions: The application of exercises on a balance cushion allows in a short time to affect the pain and mobility in the lumbar spine to fully perform their work and professional activities.

IV. Publications and reports in non-refereed peer-reviewed journals

1. Zlatkov, Y. (2019). Differentiation of the pain in the lumbosacral region, *Knowledge International Journal*, 35.4:1185-1187, ISSN 2545 – 4439

Abstract

The pain in the lumbosacral region is a very common and socially important problem. It is established that 90% of the population aged between 35 and 50 years of age are suffering from a certain discomfort in the lumbosacral region. The pain in this region can be of a different nature-neurological, traumatic, psychological, etc. Determining the type and location of pain in the lumbosacral region helps to diagnose correctly, which aids to choose the right treatment. The aim of this research is to define the nature of lumbar pain in patients that visited, for 1 month, the kinesitherapy laboratory at SWU "Neofit Rilski," Blagoevgrad, and after we analyzed the results, we could determine the kinesitherapy approach. In this research took part 30 patients (16 male and 14 female), which had pain in the lumbosacral region, at an average age of 45.37 ± 2.61 years. We used the following tests, in order to determine the nature of the pain in the lumbosacral region: Straight leg raise test, Bragard test, and a test to assess femoroacetabular impingement (FADIR Test). One of the most common tests is the Straight leg raise test. Its proper execution and interpretation can lead to a correct diagnosis of the pain in the lumbar region. We performed the Straight leg raise test, during the examination of every patient. The pain in the lumbar region, provoked by the test, from 30° to 70° is a prove for disc lesion, while above 70° -for problem in the sacroiliac joints. We applied, on some of the subjects, additional stress by performing dorsiflexion (Bragard test). After performing the Straight leg raise test, we determined that 7 of the patients have low back pains connected with the muscles nature, 7 have problems with the sacroiliac joints, and 10 of them are in pain in the lumbar region caused by disc lesion. The test was negative in 6 of the participants. We performed on them additional test for femoroacetabular impingement (FADIR test) which was

positive. It could mean starting cause for the beginning of early osteoarthritis of the hip. Recommendations were given to each group for the kinesitherapy approach needed in order for the therapy to be successful. After the recommendations, we followed-up on their condition by performing the tests again and it was determined that there is an improvement in the condition of the patients. In conclusion, we can summarize, the differentiation of the pain in the lumbosacral region, allows us to choose proper kinesitherapeutic means which can lead to control of the pain in that region. That's why, it is necessary to know, apply and interpret correctly the basic tests used to determine the nature of the discomfort in the lumbosacral region.

2. Zlatkov, Y. (2020). Characteristics of lumbar pain, Knowledge International Journal 41.3:545-550, ISSN 2545-4439

Abstract

Pain in the lumbar region is a common medical problem affecting people of different ages, sex and race. Data shows that pain in the lumbar region is affecting more and more young people, with cases of disc herniation in 12-year-old patients. Pain in the lumbar region can be of different nature-traumatic, neurological, degenerative and psychological. Statistics show that 70-80% of people have had some low back pain at some moment of their life. According to some authors, in 85% of patients with this pain no definitive cause can be identified due to the weak relationship between symptoms and the results of diagnostic images, and others report that cases of lower back pain can be attributed to a specific pain generator, with its own characteristics and different therapeutic options. Depending on the manifestation of the lower back pain, some authors describe low back pain as acute, subacute, recurrent, and chronic. Low back pain is defined by experts as an "epidemic" in the modern world. Data from research in the field show that people with episodes of low back pain often repeat them (24%-33%). Some authors report that lower back pain is often caused by non-pathological functional disorders. Pain is not always related to a certain age and gender-both young and older people, women and men suffer. Epidemiological studies show that the morbidity is about 30%, increasing from the age of 30 onwards to reach a maximum of about 55-64 years. Because of incorrect treatment of acute idiopathic low back pain, incorrect work posture, weak muscles and continuous overloading of the low back can lead to chronic low back pain. The chronicity of the disease leads to the development of degenerative changes in the intervertebral joints and degeneration of the vertebrae. The high frequency of low back pain and the difficult differentiation of their etiology have led to their being called syndrome of low back pain (low back pain). One of the reasons for the distribution of lumbar pain is lifestyle-the lack of physical activity, which leads to detraining of the muscles that support the spine. Diseases of the spine lead to spontaneous pain, tightness, limited movement, deformities and various neurological symptoms. According to the pathophysiological mechanisms that cause it, the pain is nociceptive or neuropathic. Nociceptive pain is local and occurs as a result of activation of nociceptors by damaging stimuli. Neuropathic pain occurs directly as a result of a lesion or disease affecting the somatosensory nervous system. People with pain of lumbar region are grouped into 4 groups according to the therapeutic approach to which they are subjected. Pain in the lumbar region are characterized by different reasons and duration. The variety of causes of lumbar pain are related to a different therapeutic approach. Knowledge of the characterization of lumbar pain allows us to apply adequate therapeutic means, and this will lead to a good response to pain treatment.

- 3. Zlatkova, K., Tsvetkova-Gaberska, M., Filipova, M., Zlatkov, Y. (2021). Test battery for determination of kinesitherapeutic potential in patients who survived SARS-COV-2 infection, Jubilee scientific conference with international participation: "Challenges to public health", SWU "N. Rilski", Blagoevgrad, Univ. ed. "Neofit Rilski", 2021 , Blagoevgrad, p.315-321, ISBN - 978-954-00-0304-7, National reference list No. 4646**

Abstract

Coronavirus disease (COVID-19) is a disease caused by infection with the new coronavirus (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]). **The aim** of the study was to prepare a test battery to determine the condition of patients after SARS-CoV-2, suitable for use in kinesitherapy practice. **Exhibition.** In stable patients, Zhu et al. (2020) propose to monitor key vital indicators; range of motion, the degree of dyspnea; determination of muscle strength; ability to balance; physical strength and endurance during exercise and the presence of anxiety or depression. Sweeney et al. (2021) recommend that respiratory and hemodynamic status, cognition, range of motion, strength, and endurance be used to determine physiotherapeutic assessment. We are of the opinion that when testing patients who have undergone SARS-CoV-2 to determine the condition of the respiratory system, it is necessary to include respiratory samples (Flange-Stange; Genchi-Sabraze; Prolonged count sample; Hirz 1, Hirz 2, Hirz 3). When determining the endurance and functioning of the cardiorespiratory system, we suggest performing a 6-minute walk test. We monitor the functional capabilities of patients with the Timed Up and Go (TUG) test. In our opinion, it is appropriate to use a generic questionnaire to assess the quality of life in this type of contingent such as Medical Outcomes Study Short Form 36 (SF-36). **Conclusion.** Coronavirus infection is a modern disease that affects the whole body. Determining the kinesitherapeutic potential of patients is essential in the application of rehabilitation procedures. Therefore, it is necessary to develop and integrate a single protocol for patients after SARS-CoV-2, through which to monitor the psycho-emotional state of patients.

- 4. Tsvetkova-Gaberska, M., Zlatkova, K., Zlatkov, Y., Filipova, M. (2021). Overview of kinesitherapy programs for patients after coronavirus infection, Jubilee scientific conference with international participation: "Challenges to public health", SWU "N. Rilski", Blagoevgrad, Univ. ed. "Neofit Rilski", 2021, Blagoevgrad, ISBN - 978-954-00-0304-7, pp. 322-331, National Reference List No. 4646**

Abstract

Coronavirus disease - 2019 (COVID-19) has created a great challenge for specialists in physiotherapy, rehabilitation and kinesitherapy. The epidemic spread of the disease and the possibility of affecting several physiological systems in the body, as well as short-term and long-term changes in the physical and mental condition of patients require the definition of stages for specific and optimal rehabilitation and kinesiotherapy programs. The review of the literature showed that there is a conditional division of the main stages: - application of kinesitherapy in mild and moderate cases without hospitalization; - application of kinesitherapy in hospitalized patients with COVID-19; - application of kinesitherapy in intensive care after

intensive care and after discharge from hospital. The needs and capabilities of patients in each of the stages is different, so it is necessary to use appropriate kinesiotherapy programs to restore physical and cardiorespiratory function, reduce anxiety and depression, especially in patients with comorbidities. This information would provide guidelines for the therapists' work, whose main role is the full functional recovery of patients and return to normal daily activities.

5. **Penchov, G., Zlatkov, Y. (2021). Study of trauma in athletes from the ITF national taekwon-do team, Jubilee scientific conference with international participation: "Challenges to public health", SWU " N. Rilski", Blagoevgrad, Univ. ed. "Neofit Rilski", 2021, Blagoevgrad, ISBN - 978-954-00-0304-7, pp. 336-341, National Reference List No. 4646**

Abstract.

Taekwon-do ITF is a Korean martial art for self-defense, which focuses on kicking at head height, spinning and bouncing. Despite the perceived physical benefits for all ages, practicing taekwondo can cause a variety of injuries. Taekwon-do injuries can be grouped into 2 categories: cumulative injuries (chronic) and acute injuries. **The purpose** of this study is to report the more common injuries received by athletes from the ITF national taekwon-do team during the training camp. **Methods.** In the present study we included 26 athletes (men and women) from the national taekwondo team ITF. The following tests were performed on the athletes to determine the injuries: centimetry, angular geometry, tests for envelope syndrome and knee instability, visual analog scale (VAS). **Results.** The following injuries were found: 5 athletes with Plica Syndrome; 1- runner's syndrome; 2 with distortion of the ankle; 8 are with spasm of m. gluteus medius; 1 -reinforced m. medial space; 2 spasm of the flexors in the TBS; 2- plantar fasciitis; 1 -spasm of m. flexor pollicis longus; 70% problem with plantar flexors. **Conclusion.** Taekwon-do ITF is a little researched sport. Describing the injuries received during the training camp expands the knowledge in this sport. It is essential for physiotherapists in various sports teams to recover athletes from participating in a competition. Sharing the experience of trauma treatment would help other professionals to deal with similar injuries in other sports.

6. **Tsvetkova-Gaberska, M., Zlatkova, K., Zlatkov, Y. (2022). Assessment of physiotherapeutic potential and rehabilitation of patients post COVID-19 infection, , pp. 176-183, 6th INTERNATIONAL CONFERENCE ON COVID-19 STUDIES, Manhattan, New York, January 16-17, 2022, ISBN: 978-625-8423-92-1**

Abstract

Coronavirus infection-2019 (COVID-19) has emerged as a great challenge for specialists in physiotherapy, rehabilitation, and kinesiotherapy. The epidemic spread of the disease and the risk of affecting several physiological systems in the body, as well as short term and long-term changes in the physical and mental condition of patients, require the definition of stages for specific and optimal rehabilitation and physiotherapy programs. Selecting appropriate tests and preparing an effective testing protocol are very important in order to provide information about the functional status of the patients. In this regard, we propose several important points in

testing patients who have post Covid19 infection to determine the condition of their respiratory system by using the following tests: Flange-Stange; Genchi-Sabraze; Prolonged count sample; Hirz 1, 2, 3; to determine the endurance and functioning of the cardiorespiratory system: a 6-minute walk test, Timed Up and Go (TUG) test, and a Medical Outcomes Study Short Form 36 (SF-36) -generic questionnaire to assess the quality of life. This test battery allows the precise determination of the physiotherapeutic potential of patients who have been discharged from intensive care hospital units. On the other hand, it will help and guide therapists' work to select appropriate and individual rehabilitation programs for the full functional recovery of patients and their return to normal daily activities.

7. Zlatkova K, Zlatkov Y. (2023). 6MWT in Patients after Coronary Artery Stenting, Varna Medical Forum, 12; 65-68. <https://journals.mu-varna.bg/index.php/vmf/article/view/9197/8075#>, ISSN 1314-8338 (Print), ISSN 2367-5519 (Online); National Reference List № 693

Abstract

The 6-minute walk test (6MWT) is an easily reproducible test that measures the body's response to submaximal exercise. The test is widely applicable. **The aim of** the present report is to analyze the results of the 6MWT performed in patients after coronary artery stenting. The study included 30 patients, divided into two groups of 15 each, according to the kinesitherapy they received. In the control group, we administered standard kinesitherapy to patients with cardiovascular diseases. Meanwhile, in the experimental group, we implemented a specialized kinesitherapeutic program that included isometric and resistive exercises.

Results. Mean values and standard deviations of distance traveled, oxygen saturation, arterial pressure, and heart rate were calculated. In the control group, the distance traveled showed an improvement of 78.5 m, while in the experimental group, it improved by 83.5 m. We observed a smoother increase in blood pressure in both groups after the therapy. Oxygen saturation in the experimental group was 94.27 at the beginning of the study and 94.60 by the end, and in the control group it was 94.67 (at the beginning) and 94.53 (by the end). The degree of dyspnea on the Borg scale in the patients of the control group at the beginning of the study was 2, and then 0.4. In the experimental group, the degree of dyspnea was 1.1 before kinesitherapy and decreased to 0.17 after kinesitherapy.

Conclusion. The 6-minute walking test is a simple method for evaluating the body's response to everyday stresses. The analysis of the test results before and after kinesitherapy indicates an improvement in the endurance of the participants, signifying an enhancement in their quality of life.

8. Zlatkova K, Zlatkov Y. (2023). Centimetry in patients with cardiovascular diseases, Conference Proceedings-FOURTH INTERNATIONAL CONFERENCE - Health care - a contribution to the quality of life, June 9-10, 2023; 313-317, <https://journals.mu-varna.bg/index.php/conf/article/view/9502> -

Abstract

Cardiovascular disease affects those affected negatively. In our country, two out of every three people die from cardiovascular diseases.. Centimetry is an easily applicable method of

measurement. The relationship between certain higher values measured by centimeter and the presence of diseases of the cardiovascular system has been established. **The aim** of this report is to present the measured values by centimeter in patients after coronary artery stent insertion and to analyze the results comparing them with literature data.

Materials and methods. We have used a centimeter. We measured the waist and hip circumferences as well as the height of the patients. Based on the obtained values in cm, we calculated the ratios: waist/hip, waist/height and abdominal volume index (AVI).

Results and discussion. We used the statistical package Graph Pad Prism 3.0 for the processing of results. We have calculated the mean and standard deviation for the studied indicators. We studied 30 patients after insertion of the coronary arteries. The mean values of the hip measurement were 113.05 ± 8.19 cm. The mean values of the waist measurement were 96.67 ± 8.47 cm. The mean waist/hip ratio was 0.86 ± 0.04 . The mean waist/height ratio was 0.56 ± 0.04 . The calculated mean abdominal volume index (AVI) values were 18.85 ± 3.19 .

Conclusion. Circulation calculations and the ratios derived from them can be used to assess the risk of developing cardiovascular disease. Timely detection of elevated values would allow adequate lifestyle modification measures to be taken to counteract the risk of cardiovascular disease development.

9. Zlatkov, Y., Zlatkova, K. (2023). Training program first stage in the recovery of an athlete (swimmer) after myocarditis - a case report. Book of Proceedings XXIV Scientific Conference „FIS COMMUNICATIONS 2023“; 185-189. ISBN: 978-86-81474-28-0

Abstract

The coronavirus infection can affect different organs and systems. One of the most common complications are myocarditis. Swimming is a sport that requires good functioning of the respiratory and cardiovascular systems. Monitoring the response of the cardiovascular system to exercise can be followed with various tests such as the treadmill test, the Martinet test and the Lean test. The purpose of this report is to present a program for restoring the functional capabilities of the cardiovascular system in an athlete (swimmer). The program we implement includes running and climbing stairs. The duration of the applied program is 17 days. During the first 8 days, the load includes running 2 km, and climbing 63 steps with a height of 14 cm. During the remaining 9 days, the subject runs 5 km and climbing of 126 steps. The heart rate is monitored before training, immediately after it and in the first, second and third minutes. The time for which the distance is covered is also tracked. Before the intensive training, the ejection fraction was 60%, and then – 62%. According to the treadmill test, the patient recovered the values of arterial pressure and heart rate at the 4th minute. The applied Martinet test shows a recovery of the values again at the 4th minute. In the Lian test, the score equates to poor cardiovascular health. The application of running exercises and exercises on stairs leads to adequate training of the cardiovascular system. The functional condition and endurance to load improves