Collection of abstract COVIDMOVE

UNIVERZITA MATEJA BELA V BANSKEJ BYSTRICI

BELIANUM

2024

Collection of abstracts

The movement activity enhancement after the COVID19 pandemics

project number 2021-1-SK01-KA220-HED-000023008

Co-funded by
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https://orcid.org/0000-0002-5700-1341

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ISBN 978-80-557-2129-3

EAN 9788055721293

https://doi.org/10.24040/2024.9788055721293

Content

International conference in Opole, Poland, 17.5. 2023

Health benefits of physical activity: current physical activity guidelines

Anna Rutkowska

Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland

Abstract

Regular physical activity promotes mental and physical health. It is beneficial for people of all ages and abilities, and it is never too late to start being more active and less sedentary to improve health. 81% of adolescents and 27.5% of adults currently do not meet WHO's recommended levels of physical activity. The COVID-19 pandemic has shown that physical activity must be a core component of public policy, with all countries ensuring provision of equitable physical activity opportunities for all. The WHO's Global Action Plan on Physical Activity 2018–2030 (GAPPA) will accelerate action towards meeting the global target of a 15% relative reduction in population levels of physical inactivity by 2030. The WHO has prepared physical activity recommendations for children, adolescents, adults, the elderly, pregnant women and those with chronic illnesses.

Keywords: physical activity, health benefit, increasing of physical activity

Physical activity as prevention oncological disease

Anna Rutkowska[1], David Líška[2]

[1]Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland

[2]Matej Bel University, Faculty of Sports Science and Health

Abstract

The comprehensive effects of physical activity on health have been known for centuries. Unfortunately, it is still underestimated in preventing many chronic diseases including cancer. The Physical Activity Guidelines Advisory Committee (PAGAC) has found that specific types of cancers that occur are strongly associated with physical activity levels. A systematic literature review performed by PAGAC found a strong association with bladder, breast, colorectal, endometrial, oesophageal adenocarcinoma, kidney, and gastrointestinal cancers in people with reduced levels of physical activity. The PAGAC also found moderate evidence that individuals in the highest category of physical activity had lower risk for lung cancer compared with those in the lowest category of physical activity.

Keywords: Physical activity, oncological disease, prevention

Determinants of physical activity in patients with cardiovascular diseases

Adam Wrzeciono[1], Joanna Szczepańska-Gieracha[1], Robert Gajda[3,4]

[1] Faculty of Physiotherapy, University School of Physical Education in Wroclaw, 51-612 Wroclaw, Poland.

[2] Department of Kinesiology and Health Prevention, Jan Dlugosz University in Częstochowa, 42-200 Częstochowa, Poland.

[3] Center for Sports Cardiology at the Gouda-Med Medical Center in Pultusk, 06-102 Pultusk, Poland.

Abstract

Cardiovascular diseases (CVD) are indeed one of the biggest problems in modern medicine. According to the World Health Organization (WHO), CVD are the leading cause of death globally. It is estimated that they are responsible for almost 18 million deaths worldwide every year. CVD is influenced by a variety of modifiable risk factors associated with an unhealthy lifestyle, and physical inactivity is one of the most damaging. Although physical activity (PA) is extensively promoted in both primary and secondary prevention programs, PA levels continue to fall significantly short of the current recommendations. Therefore, it is worth looking at the factors that may modify the level of PA in patients with CVD.

PA plays an important role in the management of CVD. Regular PA is associated with a reduced risk of developing CVD and contributes to the management and reduction of other risk factors. It helps in controlling blood pressure, improving lipid profile, and promoting healthy weight management. Moreover, engaging in regular exercise can provide stress relief and improve overall mental health. This is of great importance as high stress levels are associated with an increased risk of CVD. Therefore, PA is a critical component of rehabilitation programs. Supervised exercise programs help improve physical fitness, cardiac function, and overall quality of life while reducing the risk of future cardiovascular events.

Despite that rehabilitation programs during CVD promote PA, it remains a tremendous challenge to maintain PA for many individuals, especially after rehabilitation. During rehabilitation, patients often receive structured guidance and support from healthcare professionals what helps them establish a routine and build momentum in their PA. However, after the program ends, they may not have the same level of ongoing support, making it more difficult to stay motivated and accountable for maintaining PA. Second, once rehabilitation ends, patients often return to their daily routines, which may include work, family

responsibilities, and other commitments. Therefore, it could be challenging to prioritize and find time for regular physical activity. Additionally, engagement in regular PA may be difficult due to limited access to appropriate exercise facilities, equipment, or resources. Another determinant are fear and uncertainty. Some patients may feel uncertain or fearful about engaging in physical activity after rehabilitation. They may worry about overexertion, potential complications, or a recurrence of symptoms. Studies also indicate the role of depression and anxiety disorders as factors disturbing the undertaking of PA by patients with CVD. It turns out that patients with psychological disorders significantly reduce their PA and participate in exercise less often.

Addressing these challenges and finding strategies to sustain PA is crucial for long-term health benefits and management of CVD. It's important to note that the mentioned determinants can interact with each other and vary among individuals. Understanding these factors can help healthcare professionals develop tailored strategies and interventions to promote PA in patients with CVD. An interesting and potentially useful solution may be modern technologies that enable self-control, as well as diversifying the activities undertaken by patients after the rehabilitation program. Such solutions make it possible to take care of the physical condition as well as the broadly understood well-being of the patient.

Keywords: physical activity, cardiovascular disease

Respiratory-Stabilization Function Aspects in Post Covid Patients

Alena Kobesova

2nd Medical Faculty, Charles University and University Hospital Motol, Prague Czech Republic

Rehabilitation Prague School

Abstract

Covid-19 can cause mild to severe respiratory symptoms, such as coughing, shortness of breath, and pneumonia. Covid-19 can also affect other parts of the body, including the cardiovascular system, the digestive system, and the nervous and musculoskeletal system, affecting movement performance and activity of daily living. There is limited research on the effects of Covid-19 on postural control and pelvic floor function. However, there is some evidence to suggest that Covid-19 can affect respiratory function, which may in turn affect postural control and pelvic floor function. Respiratory muscle weakness, decreased lung function, and decreased oxygen saturation levels have been reported in some individuals with Covid-19. These respiratory impairments may affect postural control and pelvic floor function, as the respiratory system is important for stabilizing the trunk and providing support for the pelvic floor muscles. In addition, some individuals with Covid-19 may experience prolonged bed rest or immobility, which can also affect postural control and pelvic floor function. Prolonged bed rest can result in muscle atrophy and weakness, which can affect the ability to maintain balance and control pelvic floor muscles. Dysfunction of the pelvic floor muscles can result in urinary or fecal incontinence, pelvic organ prolapse, and sexual dysfunction. Rehabilitation and physical therapy may be beneficial for individuals recovering from Covid-19 to improve respiratory function, postural control, pelvic floor function, and to reduce musculoskeletal pain, which is important for performing daily activities and for preventing falls and injuries. Overall, more research is needed to fully understand the effects of Covid-19 on postural control, pelvic floor function, and musculoskeletal pain. The lecture will present scientific papers and educational booklet on this topic.

Keywords: COVID19, respiration function, post-COVID

Health benefits of physical activity in mental health disorders

Aleksandra Dąbrowska

Wroclaw University of Health and Sport Sciences, Physiotherapy Department

Abstract

The fact of getting benefits from physical activity is very common and obvious. On the other hand, it causes problems when it comes to list it and discuss. This presentation shows mechanisms how exactly physical activity gives us benefits. Which are sum up brain, physiological and psychological mechanisms. Then there are presented general psychological benefits of physical activity. Which are among others: promote cognitive performance, prevent cognitive decline and dementia, increase independent function, reduce symptoms of depression and anxiety, improve mood, life satisfaction, self-esteem and well-being, protect against the development of depression, lower the risk of incidental depression. And finally, it exposes detailed examples linked with mental disorders.

Keywords: Physical activity, mental disorders

Recommendations for Improving Posture and Quality of Movement to Reduce the Risk of Overloading in Static Positions, such as Sitting

Lenka Oplatková

2nd Medical Faculty, Charles University and University Hospital Motol, Prague Czech Republic

Abstract

Poor posture and quality of movement can lead to the overloading of muscles and joints, resulting in discomfort and pain. Prolonged sitting in static positions can further exacerbate these issues, leading to an increased risk of injury or chronic pain. Therefore, it is crucial to implement strategies to improve posture and quality of movement to reduce the risk of overloading. Posture is an important aspect of physical health that the COVID-19 pandemic has impacted. Maintaining proper posture has become increasingly challenging as people spend more time working from home and engaging in sedentary activities. Qualitative movements have emerged as a promising approach to studying posture and its impact on physical health. In this context, recommendations for posture in static positions, such as sitting, have become increasingly important. Implementing strategies to improve posture and movement quality can help reduce the risk of overloading in static positions such as sitting. Regular physical activity, taking breaks, and maintaining good posture are all essential components of a comprehensive plan to promote musculoskeletal health and reduce the risk of injury and pain.

Keywords: Posture, overloading, pain

Children and physical activity impact

Eliška Urbářová

Rehabilitation Prague School

Abstract

Early ontogenesis is the first determinant of our posture, which has an impact on the quality of the global motor patterns. This early matrix of the movement patterns can be changed during the different periods of our life due to the multiple other determinants as: anatomical, neurological, functional, and nociceptive. What seems to be important as well is the motion regularity, intensity, and duration, which was strongly affected during the COVID 19 pandemic situation.

It was proven that there are specific periods of the children's age when the child is under the higher risk to change the quality of the movement and strategy of the movement tasks which will affect the posture, static position, and thus the dynamic motion itself. These changes do not affect only the active musculoskeletal system as muscles but also the passive ones as ligaments, cartilage, and bones structures.

This growth spurt serves as the open window to play with the changes in the natural movement system and need to be secured by the regular intervention. However, the compliance of the children with the movement activities was compromised by the sedentary lifestyle, the technology and COVID 19. The question is how we can help kids to fullfill the WHO recommendations and guide them through this difficult and risky period of their life to prevent poor posture and future structural changes that can lead to the chronic health condition. The aim of this lecture is to look for the possible clinical guidelines that will stimulate the kids interest and thus prevent later consequences as described before.

Keywords: Physical activity, children, COVID19

The role of fitness training in the period after COVID-19 pandemic

Martin Pupiš[1], Boris Beťák[1], Lenka Oplatková[2]

[1]Matej Bel University, Faculty of Sports Science and Health

[2]2nd Medical Faculty, Charles University and University Hospital Motol, Prague Czech Republic

Abstract

The purpose of the study is to point out the most common risks resulting from inactivity during the COVID-19 pandemic. Although the whole world had to deal with restrictions related to the COVID-19 pandemic, the approach in different countries has been different. Slovakia was one of the countries with the strictest restrictions, which significantly affected the entire field of sports, from hobby categories to elite levels. We observed an increase in the body weight of the population by 2 kg or 2.5 kg in Italy and France during the first seven weeks of lockout, so it is needed to consider that such changes have an impact not only on the health of the population, but also on the performance of athletes. In the case of the school population, on a sample of 894 children (53.69% girls and 43.31% boys, seventh-9th grade of primary school), we observed that before the pandemic, 35.35% played sports 1-2 times a week, 28.85% - 3-4 times a week, 15.55% - 5 or more times a week, while 20.25% do not exercise at all. It seems to be a dangerous fact that at the end of the restrictions almost 16% of the children who played sports before the pandemic stated that they did not know whether they would play sports again, or they do not plan to return to sports. The pandemic has caused the use of face masks, which according to our findings have a significant impact on heart rate after 2 minutes of load (increase by 7.5 bpm), SpO2 (decrease by 3.63%), and performance. In conclusion, it is necessary to state that from a fitness training point of view, COVID-19 has brought new challenges related to the health and performance of athletes. Therefore, in the following period, it will be necessary to compare fitness demonstrations in the period before, during, and after the pandemic.

Keywords: physical education promote, COVID19, physical activity

Home based exercise for sedentary people

Jozef Sýkora

Matej Bel University, Faculty of Sports Science and Health

Abstract

Sitting is unfortunatelly the position people use to spend the most time during the day. When it comes to physical activity, 23 % of adults and more than 81 % adolescents globally do not meet the World Health Organization´s recommendations for physical activity and health. Sedentary lifestyle is linked with higher incidence of obesity, diabetes, hypertension or bad heart conditions as well as many musculoskeletal dysfunctions resulting in pain, depression and decreasing quality of life. The main objective of our presentation is to remind the general recommendations for physical activity as well as introduce several modalities and exercises how people with sedentary lifestyle could exercise at home in order to prevent health issues and improve their quality of life. These exercises are based on functional training principles and often help to reverse the negative impacts of prolonged sitting on human body.

Keywords: Home based exercise, promotion of physical activity

Virtual Reality-Based Pulmonary Rehabilitation: A Promising Intervention for Improving Quality of Life and Mental Health in COVID-19 Patients

Sebastian Rutkowski

Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland,

Abstract

This study aimed to evaluate the efficacy of a novel rehabilitation program incorporating virtual reality (VR) for post-COVID-19 patients. The randomized controlled trial included 32 patients who had previously experienced COVID-19 and were enrolled in inpatient pulmonary rehabilitation. The participants were divided into VR and control groups, both following a comprehensive rehabilitation program consisting of exercise capacity training, breathing exercises, resistance and general fitness training, and relaxation. The VR group received VR-based training on a cycle ergometer and relaxation, while the control group received traditional therapy. The results revealed that the VR group demonstrated statistically significant improvements in exercise tolerance, lung function, stress levels, and quality of life compared to the control group. Specifically, the VR group showed significant enhancements in functional capacity tests, exercise performance (6MWT), and quality of life. Both groups exhibited improvement in exercise performance and a reduction in stress levels, while lung function remained relatively unchanged. These findings suggest that the inclusion of VR in rehabilitation programs can offer significant benefits to post-COVID-19 patients, enhancing exercise capacity and reducing stress levels. However, the VR-based approach did not outperform traditional therapy in terms of exercise performance or lung function improvement.

Keyword: Physical activity, virtual reality, COVID19

Modern, unconventional therapeutic methods as a response to restrictions caused by the COVID-19 pandemic

Oliver Czech

Faculty of Physiotherapy, University School of Physical Education in Wroclaw, 51-612 Wroclaw, Poland.

Abstract

The COVID-19 pandemic has proven, international health systems are at a low level of preparedness and emergency response. While vaccines has offered scientists, governments and patients an emergency exit of the pandemic, precise and effective pharmacotherapy, e.g. immunotherapy for COVID-19 prevention and treatment, are yet to be established. This situation has led to an improvement and creation of new complementary and alternative treatment. Certainly, the SASR-CoV2 pandemic was a great surprise for the entire healthcare sector. It is not surprising, therefore, that the first pilot program of post-COVID-19 rehabilitation appeared in our country almost a year after the outbreak of the pandemic. Today, more than 3 years after the first outbreak of the disease, scientists are still looking for new methods to deal with the disease, even in conditions of complete lockdown. Many of the pioneering medical solutions were not applicable during the pandemic, but the development of modern technologies, forms of rehabilitation and treatment methods may provide a stable foundation for similar incidents in the future.

The use of virtual reality (VR), telemedicine and remote support today opens possibilities not only to reach patients under quarantine, but thanks to its maintenance-free, mobility and availability, it also supports the relief of medical staff, which in most countries of the world is still understaffed. Many standard medical care departments draw on these modern and unconventional forms of therapy in the daily process of treatment and rehabilitation. It has been proven that virtual reality can contribute to improving the quality of sleep, quality of life, increasing physical activity and the mental state of patients in oncology, cardiology, pulmonary and neurological wards. Many of these dependencies were also used in the post-COVID-19 rehabilitation process.

The first dedicated rehabilitation center in Poland included VR sessions in the therapeutic plan, suitable for patients whose symptoms were usually cardiological and pulmonary. The rehabilitation program was hailed as a huge success and implemented in various facilities in Poland and around the world.

Although the pandemic has claimed the lives of many millions of people, it is a valuable lesson for the present and future for the health care system. The situation we have witnessed only shows that you cannot stop on the way to discovering and improving the forms and processes of treatment. The scientific community, our determination and willingness to discover are the best driving force leading to solving real problems and threats. Representing a group of young scientists, I am proud to be able to participate in the process of creating and promoting science, so I would like this speech to be also a motivation for the next generations of people who want to broaden their horizons and change the world.

Keywords: Restriction, COVID19

Mental Health Conditions Among E-Learning Students During the COVID-19 Pandemic

Anna Rutkowska[1], Błażej Cieślik[2], Agata Tomaszczyk[3] (speaker), Joanna Szczepańska - Gieracha[4]

[1]Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland,

[2]Department of Kinesiology and Health Prevention, Jan Długosz University in Częstochowa, Częstochowa, Poland,

[3]Doctoral School, Wroclaw University of Health and Sport Sciences, Wroclaw, Poland

[4]Faculty of Physiotherapy, Wroclaw University of Health and Sport Sciences, Wroclaw, Poland

Abstract

In 2020, the COVID-19 pandemic forced universities to introduce e-learning. The isolation and changes in education system reduced interpersonal contacts among students which could affected their mental health. The aim of this study was to investigate the prevalence of depressive symptoms, levels of perceived stress and to determine the impact of e-learning on various aspects of life among students in e-learning during the COVID-19 pandemic.

A total of 753 students from Opole University of Technology took part in the survey.

The survey was conducted using an online questionnaire and was fully anonymous. To measure level of depression and severity of stress Beck Depression Inventory (BDI - II) and Perception of Stress Questionnaire were used. In addition, own survey was used to measure the impact of e-learning on social contacts, technical abilities and education various aspects of life. The results of the study indicate high levels of stress and depressive symptoms experienced by students, as well as high levels of students reporting suicidal thoughts during the COVID-19 pandemic. It was concluded that the COVID -19 pandemic had a negative impact for student's mental health. Universities should provide psychological support for students and implement strategies for managing stress.

Keywords: pandemic, students, mental health, Poland, e-learning.

The level of physical activity among Polish students during pandemic COVID-19

Magdalena Nowak[1], Aleksandra Nowakowska[2], Sebastian Rutkowski[1,2]

[1]Descartes' Error Student Research Association, Faculty of Physical Education and Physiotherapy, The Opole University of Technology, 45-758 Opole, Poland

[2]Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland

Abstract

The aim of this report is to present the results of studies investigating the physical activity of Polish students during the COVID-19 pandemic. The review of the literature identified three papers that examined the impact of the pandemic on the physical activity (PA) of students in Poland. Rutkowska et al. (2021) conducted a study involving 89 volunteers aged 22-25 years from various universities. Using the International Physical Activity Questionnaire (IPAQ), the researchers assessed PA levels during the lockdown and the subsequent "unfreezing" stage. Results showed that the average PA rate among surveyed students during the lockdown was 8640 MET-min/week, with higher levels observed among men than women. Notably, most of the activity was related to house maintenance. In the "unfreezing" stage, the average PA rate increased to 10,560 MET-min/week, representing a 20% increase. Kasiak et al. (2022) conducted an online survey among 1200 Polish students aged around 22 years from medical and non-medical universities. Results showed that 33.17% of respondents had low PA levels, 41.42% had medium levels, and only 25.41% had high levels of PA. Approximately 72% of respondents reported a negative influence of the pandemic on their PA levels, while nearly 20% indicated that pandemic restrictions served as an impetus for increased PA. Kusters et al. (2022) studied 111 students aged 14-21 from public institutions. Using the IPAQ long form, the researchers examined PA levels and compared them with WHO recommendations for young people. Results showed that the average PA rate among surveyed female students during the lockdown period was 4376 MET-min/week, while for male students, it was 5189 MET-min/week. The research revealed no significant differences between male and female students. The reviewed studies collectively demonstrated that the COVID-19 pandemic and associated restrictions had a negative impact on the PA levels of Polish students. The pandemic led to increased sitting time at the expense of active time. Moreover, there was a high level of awareness among students, especially medical students, regarding the positive

impact of high PA levels on health.

Keywords: Physical activity, IPAQ, college students,

The level of physical activity among Polish students after pandemic COVID-19

Sebastian Rutkowski, Anna Rutkowska

Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland

Abstract

The impact of the COVID-19 pandemic on physical activity was profound, with significant reductions observed across vigorous activities, moderate activities, and walking. The mean for vigorous activities fell from 1945.767 during the pandemic to 1376.896 three years post-pandemic. This change was also reflected in moderate activities, where the mean dropped from 1505.814 during the pandemic to 654.097 three years later. Walking, however, saw an increase in mean from 1293.408 during the pandemic to 1536.095 post-pandemic. The total physical activity mean also decreased from 7048.356 to 3567.088. The standard deviations suggest variability in the dataset was high both during and post-pandemic, with the largest standard deviation seen in vigorous activities (2095.398 during the pandemic and 1811.291 post-pandemic). The minimum values for all categories were 0 both during and post-pandemic, indicating some individuals were not engaging in any physical activities. The maximum values varied, with the largest seen in total physical activities during the pandemic (28440.000) and in vigorous activities post-pandemic (11520.000). There was a significant decrease in the engagement of both vigorous and moderate activities three years post-pandemic. This suggests that the pandemic may have had a long-lasting impact on the intensity of physical activities that individuals engage in. Contrary to the trends in vigorous and moderate activities, an increase in the mean frequency of walking post-pandemic was observed. This could indicate a shift towards less intense, but more consistent forms of exercise. It may also reflect changes in commuting habits or increased use of walking for stress management or leisure. The total mean physical activity decreased notably three years after the pandemic. This could have significant implications for public health, as regular physical activity is known to have a plethora of benefits, including improved cardiovascular health, mental health, and overall longevity.

Keywords: COVIDMOVE, physical activity, health benefits of exercise

Osteopathic approach to body mobility in individuals with post-acute sequence of COVID-19

Bartosz Radosz

Center for Effective Rehabilitation – Reharadosz, Żory, Poland

Abstract

The COVID-19 subacute condition is defined as persistent symptoms and or delayed or prolonged complications beyond 4 weeks after the onset of symptoms. This lecture aimed to present the main principles that form the basis of osteopathic work and the approach of osteopaths to the treatment of infection. The lecture emphasizes the importance of addressing rib restrictions, which can stiffen and irritate the fascia and soft tissues around the heads of the ribs where the sympathetic ganglia are embedded. This can lead to problems with effective nerve processing and communication at the visceral level. Rib release is a critical part of managing post-COVID-19 patients.

In addition to rib restrictions, tensions and sprains within the upper chest cavity can compromise the fascia surrounding the inferior cervical (stellate) ganglion. Disruption of its internal circulation can lead to irritation and negative effects on the remaining cervical ganglia. The pleural cupula and its ligaments, which are closely related to the mechanics of the lungs and pleura, are also important considerations in managing pulmonary pathologies and their relationship to the ribs. Restrictions of the pleural recesses can limit overall lung expansion and affect many rib and vertebral movement patterns. Pulmonary fissure therapy is a promising approach to address these limitations.

Another important aspect of osteopathic treatment is the positioning of the ribs in the context of pulmonary fissure patterns and their use in pulmonary fissure therapy. The mechanics of the respiratory system depend on the interaction of the lungs, thorax, and diaphragm, and pathological tension on the arch ligaments of ribs 11-12 can affect movement within the diaphragm, which can be transmitted to the lungs, mediastinum, sternum, and musculoskeletal system. Therefore, in the context of the diaphragm, focus should be placed on the importance of these ribs and arch ligaments.

Keywords: physical activity, COVID19

Disruption of Cellular Energy Metabolism in COVID-19: Mechanisms and Implications

Łukasz Kirejczyk

Łukasz Kirejczyk Rehabilitacja, Opole, Poland

Abstract

COVID-19 is an infectious respiratory disease caused by the SARS-CoV-2 virus that can lead to respiratory problems. Although most cases are mild, some patients may develop complications characterized by hypoxia, a condition in which there is a shortage of oxygen in the tissues relative to demand. Hypoxia can have negative effects on every cell in the human body, particularly the mitochondria, which play a crucial role in producing ATP through oxidative phosphorylation, a process that requires oxygen, nutrients, and other components. Hypoxia-induced mitochondrial disorders can result in mitochondrial damage, decreased ADP, and oxidative stress, leading to symptoms similar to those of cardiovascular disease and stroke.

In COVID-19 patients and those with post-stroke complications, the deficiency of sufficient ATP is the reason for symptoms such as muscle pain, memory problems, difficulty concentrating, and rapid fatigue. To improve patient health, supplements containing substances that support energy production processes in the mitochondria, such as creatine monohydrate, coenzyme Q10, and L-Carnitine, can be implemented, along with D-ribose to support the repair of damaged mitochondria. In addition, introducing aerobic exercise can increase the number of mitochondria in cells, improving cell function and alleviating symptoms of hypoxia-induced diseases such as COVID-19, cardiovascular failure, and stroke.

Keywords: COVID19, cellular mechanism, aerobic exercise

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The use of strength kinesiotherapy in the treatment of back pain

Jakub Novák

2nd Medical Faculty, Charles University and University Hospital Motol, Prague Czech Republic

Abstract

Back pain is one of the most common reasons why a patient visits a physiotherapist. The cause of lower back pain (LBP) is multifactorial, and diseases of visceral organs or oncological diseases can also manifest themselves as back pain. However, the most common source of back pain is the musculoskeletal system. We focused on the issue of poor postural control as one of the causes of non-specific LBP. If the muscular apparatus controlled by the central nervous system is not able to maintain the spine joints in a centered position, over time passive structures - ligaments, discs, cartilages may become overloaded. Training of ideal motor control is used very often as a treatment for LBP. From our experience and the available literature, this re-education of muscle interplay can also be trained as part of strength (resistance) training, which brings many other benefits than just removing muscle imbalances and pain, as would be the case in normal physiotherapeutic kinesiotherapy. Strength training as part of kinesiotherapy can also help us, for example, with an increase in muscle mass and an improvement in the hormonal profile. It also has great psychological effect, brings better adherence to therapy and greater adaptation of the entire musculoskeletal system, which is a very good prevention of another episode of LBP. Due to the greater load on the spine, caution is necessary, as well as good communication with the patient, precise control of the performed movements and gradual dosing of the load are necessary. A frequent form of decentration during strength training is the predominance of extensors in the stabilization strategy, which is why we focused on it in more detail.

Keywords: Back pain, COVID19, hypoactivity

Quality of life during and after the COVID19 pandemic

Dávid Líška

Matej Bel University, Faculty of Sports Science and Health

Abstract

Physical activity refers to any bodily movement that requires energy expenditure. It encompasses a wide range of activities, from simple daily tasks such as walking and household chores to more structured exercises such as running, swimming, weightlifting, and team sports. Physical activity is crucial for maintaining general health and well-being. Quality of life refers to the overall well-being, satisfaction, and happiness that an individual experience in his life. It is a multidimensional concept that encompasses various aspects of a person's existence, including physical, mental, emotional, social, and environmental factors. Quality of life is subjective and can vary greatly from one person to another, depending on their values, goals, and circumstances. There is a strong and well-established connection between physical activity and quality of life. Regular physical activity can have a positive impact on various aspects of an individual's quality of life, including physical, mental, emotional, and social well-being.

Keywords: physical activity, COVID19, pandemics,

The importance of physical activity in patients with liver cirrhosis

Marcel Sekereš

Departement of Physiotherapy, Faculty of Health in Banská Bystrica, Slovakia

Abstract

Liver diseases are one of the main causes of morbidity and mortality worldwide. Mortality from liver cirrhosis in Europe is on the rise, with Slovakia in first place in prevalence. Among the main complications of liver cirrhosis is secondary sarcopenia, which is mainly caused by hyperammonemia, increased myostatin and decreased growth hormones. It is an important predictor of mortality before and after trnasplantation and is associated with a higher rate of infection, a longer period of hospitalization, with hepatic encephalopathy or a reduced quality of life. After sarcopenia, frailty syndrome is a frequent complication in patients with liver cirrhosis. It is a different, multifaceted construct consisting mainly of functional decline, sarcopenia, malnutrition, physical deconditioning, impaired cognition, balance and cardiopulmonary fitness. Patients with developed frailty have a significantly lower physiological reserve against adverse events. In the case of terminal liver disease, the only curative treatment is transplantation. The goal of prehabilitation is to improve overall health and well-being before major surgery. Intervening in the preoperative period to modify behavioral and lifestyle risk factors can increase the patient's physiological reserve to moderate the surgical stress response. For patients waiting for a liver transplant, the purpose of prehabilitation is, in particular, nutritional intervention, exercise aimed at lowering their frailty in order to reduce the risk of mortality, and psychological intervention, especially in the sense of motivation. The Liver Frailty Index and the 6-minute walk test are suitable for objectifying the functional status of patients with cirrhosis. Exercise interventions are shown to be safe and well tolerated in patients with cirrhosis and may have a beneficial effect on muscular or cardiorespiratory fitness and quality of life, may reverse sarcopenia, improve muscle strength, balance, may reduce the portal pressure gradient in the liver, reduce the risk of falls whether to positively influence the change in the composition of the intestinal microflora. Exercise interventions can be aerobic or strength exercises, or a combination thereof, and should be focused mainly on large muscle groups, especially on the lower limbs. The use of electromyostimulation together with exercise appears to be a suitable means of treating secondary sarcopenia in critically ill patients. Based on the results of our work, we can claim that the use of electromyostimulation did not represent significant differences

between the observed groups. However, in spite of this, we recommend that, as part of the prehabilitation of patients with cirrhosis of the liver awaiting transplantation, regular exercise supplemented with electromyostimulation should be included in the treatment process during hospitalization as a means of possibly reducing the rate of frailty and mortality.

Keywords: liver cirrhosis, physical activity, rehabilitation, sarcopenia, frailty

Respiratory physiotherapy of post COVID patients

Marián Jendrichovsky

Abstract:

The aim of this presentation is to share experiences from the previous pandemic period of COVID 19 infection. To provide basic information about the clinical picture, diagnostic and therapeutic procedures of pulmonary rehabilitation. Inform about the structure of the respiratory program for the post of COVID 19 patients at our workplace. Provide guidance on expert advice in the treatment of acute respiratory distress and respiratory dysfunction in a long COVID 19 patient. Conduct a discussion on other possibilities for using RFT procedures. Outline the patient's needs and possible future direction of RFT in the treatment of COVID 19 patients.

Keywords: long COVID 19, respiratory physiotherapy, respiratory dysfunction

Physical activity among Polish university students

Sebastian Rutkowski[1], Líška Dávid[2], Anna Rutkowska[1]

[1]Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland

[2]Matej Bel University, Faculty of Sports Science and Health

Abstract

The presented study investigates the post-pandemic physical activity levels among Polish university students in the year 2022. The research utilizes the Short Form of the International Physical Activity Questionnaire (IPAQ-SF) to assess the physical activity (PA) levels within the observed student cohort. Descriptive statistics were employed to analyze the collected data, including body mass and height-related variables. The study employed the Mann-Whitney U test to compare physical activity levels in various categories, encompassing vigorous activities, moderate activities, walking, and total physical activity. Among females, the mean vigorous activity time for Polish students was 955.4 minutes (SD = 1422.3), while among males' students had the highest mean vigorous activity time at 1740.5 minutes (SD = 2023.3). The results indicate statistically significant differences in vigorous activities between genders ($p < .001$). For moderate activities, among females, reported a mean time of 645.7 minutes (SD = 1028.8), while among males reported a mean time of 661.3 minutes (SD = 1053.3). Moderate activities displayed no significant difference between genders ($p = 0.706$). In the walking category, among females, reported an average of 1733.5 minutes (SD = 1383.5) and 1365.8 minutes (SD = 1226.7) among meles. For total physical activity, among females' Polish students with 3334.6 minutes (SD = 2359.6) and 3767.6 minutes (SD = 2469.2) among males. These findings provide insights into the post-pandemic physical activity landscape among Polish students, highlighting variations in activity levels across different categories. Further exploration of the factors influencing these activity levels could contribute to devising effective strategies for promoting physical activity in this population.

Keyword: physical activity, COVIDMOVE, increasing of physical activity

Disruption of Cellular Energy Metabolism in COVID-19: Mechanisms and Implications

Łukasz Kirejczyk[1], Bartosz Radosz[2], Sebastian Rutkowski[3]

[1]Łukasz Kirejczyk Rehabilitacja, Opole, Poland

[2]Center for Effective Rehabilitation – Reharadosz, Żory, Poland

[3]Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland

Abstract

The ongoing COVID-19 pandemic, caused by the SARS-CoV-2 virus, has underscored the profound impact of viral infections on cellular processes, particularly energy metabolism. This presentation delves into the intricate relationship between COVID-19-induced hypoxia, cellular energy metabolism disruption, and its implications for human health. COVID-19 manifests with a spectrum of symptoms, ranging from mild to severe. Hypoxia, a hallmark of severe cases, arises due to reduced blood oxygen saturation. Hypoxic conditions can lead to compromised mitochondrial function, crucial for energy production through oxidative phosphorylation, culminating in cellular energy crisis and metabolic disturbances. Mitochondria, pivotal cellular organelles, account for up to 10% of human body weight and facilitate energy generation from nutrients. A central player in energy production, adenosine triphosphate (ATP), is synthesized in mitochondria via the electron transport chain (ETC). Hypoxia disrupts this process, leading to decreased ATP synthesis and accumulation of lactic acid, inducing cellular stress. Prolonged or intense hypoxia triggers significant mitochondrial dysfunction by depleting the pool of adenosine diphosphate (ADP), an essential precursor for ATP generation. Even upon oxygen restoration, excreted ADP converts to adenosine monophosphate (AMP), causing oxidative stress via heightened free radical production in the respiratory chain. Restoring cellular energy balance is a gradual process, necessitating ribose and time. Various supplements, including D-ribose, Coenzyme Q10, L-carnitine, B vitamins, vitamin C, vitamin E, and creatine monohydrate, aid post-hypoxia recovery by replenishing depleted components. Physical activity emerges as a potent intervention, enhancing mitochondrial biogenesis and ATP availability. Regular aerobic exercise increases mitochondria by 50% within six months, bolstering post-illness mitochondrial recovery, and strengthening resilience to oxidative stress. Diet plays a pivotal role in supporting mitochondrial function. Nutrient-rich, balanced diets are crucial for adequate energy generation. Additionally, calorie restriction mitigates free radical production, attenuating

metabolic stress. In conclusion, COVID-19-induced hypoxia disrupts cellular energy metabolism, primarily through mitochondrial dysfunction, resulting in energy crises and cellular stress. Strategies to restore energy homeostasis involve supplementing essential precursors, engaging in regular physical activity to enhance mitochondrial recovery, and maintaining a balanced diet to support mitochondrial function. Understanding the mechanisms underlying these disruptions holds significant potential for developing targeted therapeutic interventions to mitigate the impact of viral infections on cellular energy metabolism and overall health.

Keywords: COVID19, pandemic, energy metabolism

Impact of the COVID-19 pandemic on spine pain in the adult population

Peter Bartík, Peter Šagát

Sport Sciences and Diagnostics Research Lab, GSD – Health and Physical Education Department, Prince Sultan University, Riyadh 11586, Saudi Arabia

Abstract

This cross-sectional study aimed to estimate the effect of the COVID-19 quarantine on back pain (BP) intensity, prevalence, and associated risk factors among adults of active age. A self-administered structured questionnaire composed of specific questions regarding demographic characteristics, work and academic-related aspects, physical activity (PA), daily habits and tasks, and pain-related aspects was used. The BP point prevalence before the quarantine was significantly lower than after the quarantine. The BP intensity significantly increased during the quarantine. The low back was the most common musculoskeletal pain area. Furthermore, during the quarantine, a significantly higher BP intensity was reported by those individuals who (A) were aged between 35 and 49 years old, (B) had a body mass index equal to or exceeding 30, (C) underwent higher levels of stress, (D) did not comply with the ergonomic recommendations, (E) were sitting for long periods, (F) did not practice enough PA, and (G) underwent teleworking or distance learning. No significant differences were found between genders. The COVID-19 quarantine resulted in a significant increase in BP intensity and prevalence.

Keywords: COVID19, back pain, pandemic

The interplay between the quality of sleep and physical activity

Pavol Pivovarniček[1], Lukáš Hricko[1], Ľudmila Jančoková[1], Robert Vyšehradský[2]

[1]Matej Bel University, Faculty of Sports Science and Health

[2]Clinic of Pneumology and Phthisiology, Jessenius Faculty of Medicine in Martin, Comenius University Bratislava, Slovak republic

Abstract

The quality of sleep represents a critical aspect of human physiology and has profound implications for an individual's well-being. The restorative power of sleep is evident in how it affects one's physical and mental health, overall vitality, and daily functionality. Sleep quality is a multifaceted construct influenced by various factors, including sleep duration, sleep architecture, sleep continuity, and sleep efficiency. Sleep architecture involves the organisation of sleep into different stages, primarily consisting of nonREM (rapid eye movement) and REM sleep. Frequent awakenings during the night can disrupt sleep patterns and result in poorer sleep quality. Physical activity, on the other hand, encompasses a wide spectrum of bodily movements, ranging from mundane activities of daily life, such as walking and gardening, to structured exercises such as running, swimming, and weightlifting. Engaging in physical activity is a cornerstone of a healthy lifestyle and offers numerous benefits for physical, mental, and emotional well-being. The interplay between sleep quality and physical activity is intricate and dynamic. Research has shown that regular physical activity is associated with positive impact sleep quality. Physical activity can help individuals fall asleep more easily, experience deeper and more restorative sleep, and reduce the risk of sleep disorders such as insomnia and sleep apnea. Increased physical activity and sleep quality play a crucial role after COVID19 pandemic in the high school population.

Key words: COVID-19 pandemic, sleep cycle, high school population, sports activity

Physical activity among university students

Dávid Líška

Matej Bel University, Faculty of Sports Science and Health

Abstract

Physical activity refers to any bodily movement that requires energy expenditure. It encompasses a wide range of activities, from simple daily tasks like walking and household chores to more structured exercises like running, swimming, weightlifting, and team sports. Physical activity is crucial for maintaining overall health and well-being. University students, often referred to as college students. They are individuals who are enrolled in a tertiary education institution, typically pursuing undergraduate or postgraduate degrees. These students are at a stage in their educational journey where they have completed their secondary education. The key to reaping the benefits of physical activity for university students is finding activities whch they enjoy and can sustain in the long term. This can include a combination of aerobic exercises, strength training, flexibility exercises, and activities that align with their interests and preferences.

Keywords: physical activity, university students

How to exercise at home during COVID-19 pandemic restrictions

Jozef Sýkora

Matej Bel University, Faculty of Sport Science and Health

Abstract

The COVID-19 pandemics had several negative impacts on people's daily life. Until then, more than 23 % of adults and more than 81% of adolescents worldwide did not meet the recommendations of the World Health Organisation for physical activity and health. Pandemics only increased these numbers. Sedentary lifestyle is associated with a higher incidence of obesity, diabetes, hypertension, or bad heart conditions, as well as many musculoskeletal dysfunctions that result in pain, depression, and a decrease in quality of life. The main objective of our presentation was to summarise the general recommendations for physical activity and to introduce several modalities and exercises to show how people with a less active lifestyle could move at home to prevent health issues and improve their quality of life. These exercises are based on functional training principles and often help reverse the negative impacts of prolonged sitting on the human body. The main idea of these exercises is to respect the neuromuscular functions of the human body, natural movement patterns, and prepare people for everyday activities.

Keywords: COVIDMOVE, pandemics, physical activity

The level of resiliency in patients with liver cirrhosis after the pandemic COVID19

Laura Matulová[1], Dávid Líška[2], Ľubomír Skladaný[3]

[1]Slovak Medical University, Faculty of HealthCare in Banská Bystrica

[2]Matej Bel University, Faculty of Sports Science and Health

[3]2nd Department of Internal Medicine, Faculty of Medicine, HEGITO (Div Hepatology, Gastroenterology and Liver Transplant), F. D. Roosevelt Teaching Hospital, Slovak Medical University, Banská Bystrica, Slovakia.

Abstract

The pilot study focusses on the issue of psychological and physical resistance in patients with liver diseases, such as cirrhosis of the liver. Low level of resilience is associated with a low level of physical activity. Resilience is the ability to cope with life's challenges and effectively manage stressful situations, failures, life difficulties, and traumas. People with higher resilience are able to face these external situations, improve their physical and psychological condition, and use them to their advantage. Therefore, resilience is an important part of patient rehabilitation. Liver disease patients must adapt to lifestyle changes and adhere to various restrictions to maintain and improve liver health. Alcoholics must cope with abstinence and change their lifestyle. Resilience plays an important role in supporting adherence to these changes and can lead to more successful rehabilitation and better disease management. Resilience is differentiated into several types, each of which affects a person's ability to cope with different forms of stress. Physical resilience refers to the body's adaptation to challenges, endurance, strength, and rapid recovery from damage. Mental resilience is the ability to mentally cope with uncertainty, challenges, and adversity. Emotional resilience includes the ability to understand one's own emotions, use realistic optimism, and positively manage stressful situations. Social resilience manifests itself in the ability to use the support of close people to solve problems. In the field of physical therapy, resilience has significant application. Patients who demonstrate a higher level of resilience tend to be more motivated, more disciplined, and more determined to invest effort in their improvement. Physiotherapists actively support resilience by providing emotional support motivation, and increasing self-confidence.

Keywords: rehabilitation, liver diseases, resilience

Co-funded by
the European Union

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International conference in Prague, Czech Republic, 1.11. 2023

Kinesiology and Rehabilitation Doctoral Studies: Research and Student Programs During and Post-COVID-19 Pandemic

Alena Kobesová

2nd Medical Faculty, Charles University and University Hospital Motol, Prague Czech Republic

Abstract

The COVID-19 pandemic significantly impacted doctoral studies' progress in the Czech Republic and globally. Restrictions on accessing research facilities, laboratories, patients, and study participants impeded data collection. Travel restrictions and safety measures further complicated field research beyond one's workplace. This environment necessitated some students to alter or switch their research topics due to constrained opportunities. Conversely, others discovered new research avenues related to various COVID-19 aspects.

In Kinesiology and Rehabilitation doctoral programs, a notable shift occurred as many students started exploring COVID-19's implications on rehabilitation and physical activity. Pandemic measures led to the adaptation of therapeutic methods and procedures, highlighting telerehabilitation. This approach, involving individual online sessions or group video conferences, gained prominence. The pandemic spurred research into innovative healthcare technologies facilitating remote rehabilitation, online patient monitoring, and movement function diagnosis to some degree.

The education and training of healthcare workers, including rehabilitation professionals, played a crucial role in swiftly adapting to new conditions and technologies. The pandemic also heightened the awareness of mental health's role in rehabilitation. Research pivoted towards examining the psychological aspects of severe COVID-19 patients, the psychological impacts of isolation and quarantine, and the long-term effects of COVID-19, commonly referred to as long COVID. Mobility restrictions posed a significant challenge, leading to numerous studies on the effects of prolonged reduced mobility on physical fitness, mental well-being across different age groups, social participation, and the feasibility of sports and physical activities during quarantine. The influence of vaccination on patients' health, physical, and psychological functions emerged as a vital research area. Developing protocols for the rapid rehabilitation and recovery of COVID-19 patients holds the promise of improving long-term therapy outcomes and fostering new, effective rehabilitation strategies.

The shift to distance learning and reduced access to university facilities brought about challenges in communication within research teams, and limitations in accessing libraries and resources. Many doctoral students pivoted towards online surveys and remote research methodologies. Financial challenges also arose, necessitating a restriction in planned expenditures (particularly for travel and international participation) or a redirection towards pandemic-related research. Overall, the COVID-19 pandemic had a multifaceted impact on doctoral research, presenting a spectrum of challenges and opportunities. Flexibility and rapid adaptation became essential for students, mentors, and collaborators to maintain the momentum of ongoing research projects.
Keywords: COVID-19 pandemic, rehabilitation, university students.

Impact of the pandemic on the quality of life of patients with liver cirrhosis

Dávid Líška

Matej Bel University, Faculty of Sports Science and Health

Abstract

The COVID-19 pandemic has significantly affected the quality of life of people around the world. The impact of the pandemic varied by region, health system, social and economic factors, and measures taken to control the spread of the virus. For several diseases, a lower quality of life of patients was found during the pandemic. The quality of life of many people has significantly deteriorated, while the pandemic has affected both physical and psychological health, financial stability and social relationships. Liver cirrhosis is an advanced liver disease that occurs as a result of chronic inflammatory damaging processes in the liver. These processes damage hepatocytes and gradually replace them with fibrous scar tissue. Cirrhosis can have serious health consequences and can lead to a variety of complications, including liver dysfunction and organ failure. The main objective of this presentation is to present the results of a study of the quality of life of patients with liver cirrhosis during the pandemic.

Keywords: Pandemic COVID19, quality of life, cirrhosis of the liver

Virtual reality in the treatment of post-acute sequealae of COVID-19

Sebastian Rutkowski[1], Anna Rutkowska[1], Lukasz Kirejczyk[2], Bartosz Radosz[3], Alejandro Galán[4].

[1]Department of Physical Education and Physiotherapy, Opole University of Technology, Opole, Poland

[2]Łukasz Kirejczyk Rehabilitacja, Opole, Poland

[3]Center for Effective Rehabilitation – Reharadosz, Żory, Poland

[4]Faculty of Nursing and Physiotherapy, University of Cadiz, Spain

Abstract

The aim of this presentation is to synthesize and compare the findings of existing studies focusing on rehabilitation and therapy post-COVID-19, particularly emphasizing the role of Virtual Reality (VR).

The first study, titled "Use of Virtual Reality in the Inpatient Rehabilitation of COVID-19 Patients," investigates the application of VR in the rehabilitation of hospitalized COVID-19 patients. Conducted in the COVID-19 Recovery Unit at NewYork-Presbyterian/Weill Cornell, the study revealed a high level of satisfaction among both patients and medical staff.

The second study, "Heart Rate Variability during Virtual Reality Activity in Individuals after Hospitalization for COVID-19," explores the impact of VR activities on heart rate variability in individuals' post-hospitalization due to COVID-19. This cross-sectional study involved 94 participants and found an increase in sympathetic nervous system activity and a decrease in parasympathetic nervous system activity during VR activities.

The third study, "Inpatient post-COVID-19 rehabilitation program featuring virtual reality—Preliminary results of randomized controlled trial," examines the efficacy of a VR-based rehabilitation program. The intensive program ran five times a week for three weeks and aimed to compare the effectiveness of traditional and VR-based therapies. The study showed statistically significant improvements in exercise performance and stress levels in both groups. In terms of the virtual reality (VR) devices and training modalities employed, the three articles exhibit distinct technological frameworks and intervention strategies. The first article utilizes SootheVR by AppliedVR, a commercially available headset programmed with various categories of experiences, ranging from guided meditation sessions in realistic, immersive natural scenes to cognitively stimulating games. The second article employs a software called MoveHero, a game where participants are required to touch falling spheres in

rhythm with music, capturing participants' movements via a webcam. The third article incorporates "Virtual Park" software developed by STIIMA-CNR, along with VR TierOne for relaxation.

In summation, the studies collectively accentuate the promising role of VR as an efficacious tool in post-COVID-19 rehabilitation. Despite variations in methodology, patient demographics, and technological platforms, the overarching narrative underscores the potential of VR in enhancing rehabilitation outcomes.

Keywords: postcovid rehabilitation, COVID19, virtual reality

Psychosomatic approach in physiotherapy in post covid syndrome

Vít Bezecný, Lenka Oplatková

Klinika rehabilitace a tělovýchovného lékařství 2. LF UK a FN Motol

Abstract

The oral presentation deals with the physiotherapeutic view of the post-covid syndrome and the psychosomatic approach to it. It is based on theoretical studies dealing with the connection between the psychological and somatic aspects of this disease and the extent of its influence on the psychological and physical condition of the patient. Based on diagnostic tests of postural and respiratory functions, a 6-minute walk test and structured questionnaires (PHQ-9, PHQ-15, CAT, and FAS) investigating subjective feelings of the patient, such as the experience of illness, stress, fear, and depression. Establishes possible physiological interventions for the treatment of patients with post-covid syndrome. The presentations presents a proposal for a rehabilitation plan for patients with post-covid syndrome, based on correction of the postural system, physiotherapy using the respiratory and postural functions of the diaphragm, respiratory physiotherapy, and overall improvement of physical condition. Its effect is presented in the form of two case studies. Standardised questionnaires show an improvement in the physical and psychological condition of both patients. The results also confirm that in both cases there was an increase in breathing amplitude, up to 5 cm. The positive impact of the rehabilitation plan on the physical condition of one of the patients monitored on the basis of the 6-minute walking test is evidenced by an improvement of 17%. Subjectively, both patients perceived the effect of the rehabilitation programme as very beneficial. The results of the work indicate the suitability of including not only rehabilitation, but also a psychosomatic perspective in the physiotherapy intervention for patients with post-covid syndrome.

Keywords: physiotherapy, COVID19, post-covid syndrome

Compliance with clinically recommended in the treatment of back pain in the Czech Republic

Tomáš Kavka, Markéta Ryšavá

Klinika rehabilitace a tělovýchovného lékařství 2. LF UK a FN Motol

Abstract

In the context of treating individuals with nonspecific low back pain in the Czech Republic, adherence to clinical practice guidelines is a crucial aspect to ensure high-value care. This exploratory cross-sectional study involved physiotherapists and medical doctors actively treating adults with low back pain. Fear-Avoidance Beliefs Tool (FABT) is a questionnaire used to assess pain-related fear and avoidance behaviour in people experiencing chronic pain as well as in. The findings of this study indicated a negative association between guidelines adherence and factors such as female gender, lower education level, more years of practice, and higher Fear-Avoidance Beliefs Tool-CZ score. Low adherence was also observed for unnecessary restriction of physical activity and exercise. The results suggest that adherence to clinical guidelines is likely low in the Czech Republic. To improve high-value care, the development of local, high-quality clinical practice guidelines is recommended so that active coping strategies include. Physical activity and exercise are adequately promoted by clinicians in the Czech Republic. Additionally, more research is needed to understand and address barriers and facilitators to adherence through both quantitative and qualitative approaches.
Keywords: Fear-Avoidance Beliefs Tool (FABT), back pain, physical activity

Achilles tendinopathy, COVID19 and physical activity

Jakub Katolický[1], Tomáš Nedělka[2-3], Stanislav Machač[1]

[1] Klinika rehabilitace a tělovýchovného lékařství, 2. LF UK a FN Motol

[2] Neurologická klinika, 2. LF UK a FN Motol

[3] Katedra zdravotnických oborů a ochrany obyvatelstva, FBMI ČVUT

Abstract

Achilles tendinopathy is a clinical syndrome characterized by pain and dysfunction of the Achilles tendon affecting both athletes and non-athletes. It is usually categorized as overuse injury. Etiopathogenesis involves intrinsic and extrinsic factors, including improper footwear, poor biomechanics, fails in recovery and loading, metabolic diseases, aging, and other factors. Physical activity and exercise play a significant role in both the development and management of Achilles tendinopathy. During the COVID-19 pandemic, many individuals experienced reduced physical activity due to lockdowns, social distancing measures, and limitations in access to exercise facilities. Reduced physical activity with subsequent return to the original load or sudden increased physical activity due to the amount of time could contribute to various musculoskeletal disorders, including Achilles tendinopathy. Once the acute phase subsides, gradual loading is recommended followed by a return to physical activity. This should be done under the guidance of a healthcare professional (e.g. physical therapist) who can provide a customised rehabilitation programme. Persistent and untreated pathological processes of tendinopathy also affect the tendon morphology. Gradual expansion of the tendon and, at the micromorphological level, a disruption of the collagen fibers organization occur. Extracorporeal shockwave therapy (ESWT) is a safe and noninvasive medical procedure that has been used in the treatment of various musculoskeletal conditions, including Achilles tendinopathy with promising results. Its biological effects in the tissue usually lead to pain reduction and stimulation of healing and remodeling processes in the tendon. The optimal combination of physical therapy, including ESWT, and exercise can represent a significant benefit in the treatment of Achilles tendinopathy.

Keywords: COVID19, Physical activity, Achilles tendinopathy, Extracorporeal shockwave therapy

Spinal cord injury, rehabilitation and sleep apnea

Lenka Honzátková[1,2], Jiří Kříž [1,3]

[1] 2. Lékařská fakulta, Univerzita Karlova, Praha

[2] Centrum Paraple, Praha

[3] Spinální jednotka, Fakultní nemocnice Motol, Praha

Abstract

The COVID-19 pandemic had a significant impact on healthcare systems and the delivery of medical care around the world. A spinal cord injury (SCI) is a severe medical condition that occurs when the spinal cord, typically resulting in loss of function, sensation, or mobility below the level of the injury. The spinal cord is a vital part of the central nervous system, transmitting messages between the brain and the rest of the body. Spinal cord injuries can be caused by various factors, including trauma, disease, or medical conditions. The most common causes of spinal cord injuries are traumatic incidents. Spinal cord injury (SCI) rehabilitation is a crucial and comprehensive process designed to help people with spinal cord injuries regain as much independence and function as possible. The primary goals of SCI rehabilitation are to improve physical, psychological and social well-being, enhance mobility, and promote overall quality of life. Rehabilitation programs are typically tailored to the individual's specific needs and can involve a multidisciplinary team of healthcare professionals. Sleep apnea is a medical condition related to breathing during sleep. It is a disorder characterized by repeated interruptions in breathing or shallow breaths during sleep. These interruptions, known as apneas, can last for several seconds to minutes and can occur many times during the night. Obstructive sleep apnea is the most common type of sleep apnea. It occurs when the muscles of the throat relax excessively during sleep, leading to a partial or complete blockage of the airways. This obstruction causes someone to momentarily stop breathing, often accompanied by loud snoring or choking sounds. As treatment, positive pressure therapy in the respiratory tract during sleep (CPAP) is commonly instituted. However, CPAP therapy is often rejected or poorly tolerated by patients. Alternatively, the American Association of Sleep Medicine recommends the use of Mandibular Advancement Devices (MAD). The MAD prevents the upper airway from collapsing by anterior displacement of the mandible. The aim of the oral presentation is to determine the efficacy of MAD therapy in people with SCI and to verify their adherence to the therapy. The results of the study so far look promising for a significant reduction in apneic pauses in test subjects,

and the study also showed higher adherence than is confirmed with CPAP.

Keywords: physical activity, sleep apnea

Increasing physical activity using virtual reality in patients with multiple sclerosis

Barbora Miznerová[1,2], Libor Váša[5], Jakub Frank[5], Lubomir Rodina[4], Anna Herynkova [2], Tom Philipp[2], Jana Hlinovska[2], Ivana Stetkarova[8], Jindra Reissigová[7], Kamila Řasová[2,3]

[1] Klinika rehabilitace a tělovýchovného lékařství 2. LF UK a FN Motol

[2]Klinika revmatologie a rehabilitace 3. LF UK a FTN

[3]Klinika rehabilitačního lékařství 3. LF UK a FNKV

[4]Fakulta tělovýchovy a sportu U

[5]Fakulta aplikovaných věd - Západočeská univerzita v Plzni

[6]Ústav lékařské genetiky 3. LF UK

[7]Ústav informatiky AV ČR

[8] Neurologická klinika FNKV

Abstract

Physical activity refers as a bodily movement includes a wide range of activities. Physical activity is essential to maintain good health and well-being and can be beneficial for individuals with multiple sclerosis (MS). MS is a chronic autoimmune disease that affects the central nervous system and leads to a variety of physical and neurological symptoms. Appropriate physical activity and physiotherapy can maintain functioning and prevent deterioration and thus quality of life.

Virtual reality (VR) is a technology that creates a computer-generated environment or simulation in which users can interact with a three-dimensional immersive digital world. Virtual reality (VR) has shown promise as a rehabilitation tool for individuals with multiple sclerosis (MS). MS is a chronic neurological condition that can lead to various physical and cognitive impairments. VR-based rehabilitation programmes can provide a more engaging and motivating way to address some of these challenges. Virtual reality systems can offer exercises and simulations that address balance and mobility issues commonly experienced by people with MS. Users can practice standing, walking, or navigating obstacles in a controlled virtual environment. These exercises can help improve coordination and reduce the risk of falls. VR can be used in physical therapy sessions for MS patients. It allows therapists to create customised exercises and activities tailored to each individual's needs and progression. Patients can work on muscle strength, flexibility, and range of motion in a virtual environment. In our work we focused on tailor-made virtual reality software in upper limb

rehabilitation in people with multiple sclerosis. Its A specific feature is that in addition to sensorimotor learning, it also includes physiotherapeutic methods for neurophysiological facilitation and inhibition. Feasibility and suitability for maintaining upper limb function in patients with multiple sclerosis are currently under research.
Keywords: physical activity, virtual rehabilitation, multiple sclerosis

Physical activity after stroke

Jan Dobiáš, Michal Říha

Oddělení rehabilitační a fyzikální medicíny, Ústřední vojenská nemocnice – Vojenská fakultní nemocnice Praha

Abstract

A stroke is a medical condition that occurs when there is a sudden interruption in the blood supply to the brain, leading to brain cell damage or death. It is a medical emergency and requires immediate medical attention. Stroke can have serious and potentially life-threatening consequences if not treated promptly. After a stroke, many individuals experience changes in their gait, which refers to the way they walk. The extent and nature of these changes can vary widely depending on the severity and location of the stroke, as well as individual factors. Rehabilitation plays a crucial role in improving gait after stroke. After a stroke, many individuals experience changes in their gait, which refers to the way they walk. The extent and nature of these changes can vary widely depending on the severity and location of the stroke, as well as individual factors. Physical therapy and occupational therapy are often prescribed to help people regain strength, flexibility, balance, and coordination. Specific exercises and techniques can be used to address the gait abnormalities mentioned above. Additionally, therapists can teach compensatory strategies to enhance mobility and reduce the risk of falls. Over time, with consistent rehabilitation and practice, some stroke survivors can make significant improvements in their gait. However, the degree of recovery varies from person to person. It is essential that individuals work closely with their healthcare team to create a customised rehabilitation plan tailored to their specific needs and goals.

Keywords: stroke, rehabilitation, gait cycle

Temporomandibular joint and physical activity

Magdaléna Česneková[1], Karel Jelen[2], Vladimír Machoň[1], Lucie Himmlová[1]

[1]Stomatologická klinika 1.LF UK a VFN, Kateřinská 32, Praha 2

[2]Ústav patologické fyziologie 2.LF UK, V Úvalu 84, Praha 5

Abstract

The temporomandibular joint (TMJ) connects mandible to temporal bone and is located in front of the ear. This joint plays a crucial role in various jaw movements, such as chewing, talking and yawning. Malfunctions in TMJ known as temporomandibular joint disorders (TMD or TMJD) can be caused by a variety of factors, including stress, bruxism (teeth grinding), jaw injuries, arthritis, and malocclusion (misalignment of the teeth or jaw). Another one common cause of TMJD can be also physical activity acting in various ways, depending on the type and intensity of the activity, as well as an individual's predisposition to TMJ issues. Also poor posture as such or during physical activities, such as weightlifting, can affect the alignment of the neck and jaw by impairing muscle orchestration. All these factors can lead to TMJD manifested as pain, discomfort, and difficulty in opening and closing movements of the mouth. Misalignment may contribute to TMJ discomfort or pain. Maintaining good posture and alignment, both during exercise and in daily life, can help reduce the risk of TMJ-related issues. Physical activity can have both positive and negative effects on the TMJ, depending on various factors. Maintaining proper form, using protective equipment when necessary, and being mindful of jaw-related habits can help minimize the risk of TMJ problems during physical activities. Treatment for TMJ disorders may include conservative approaches like lifestyle modifications, physical therapy, and pain management techniques. In more severe cases, dentists or oral surgeons may recommend dental appliances, splints, orthodontic treatments, or, in rare instances, surgical intervention to correct structural problems within the joint including TMJ endoprosthesis.

Keywords: Physical activity, mechanical problems, temporomandibular joint

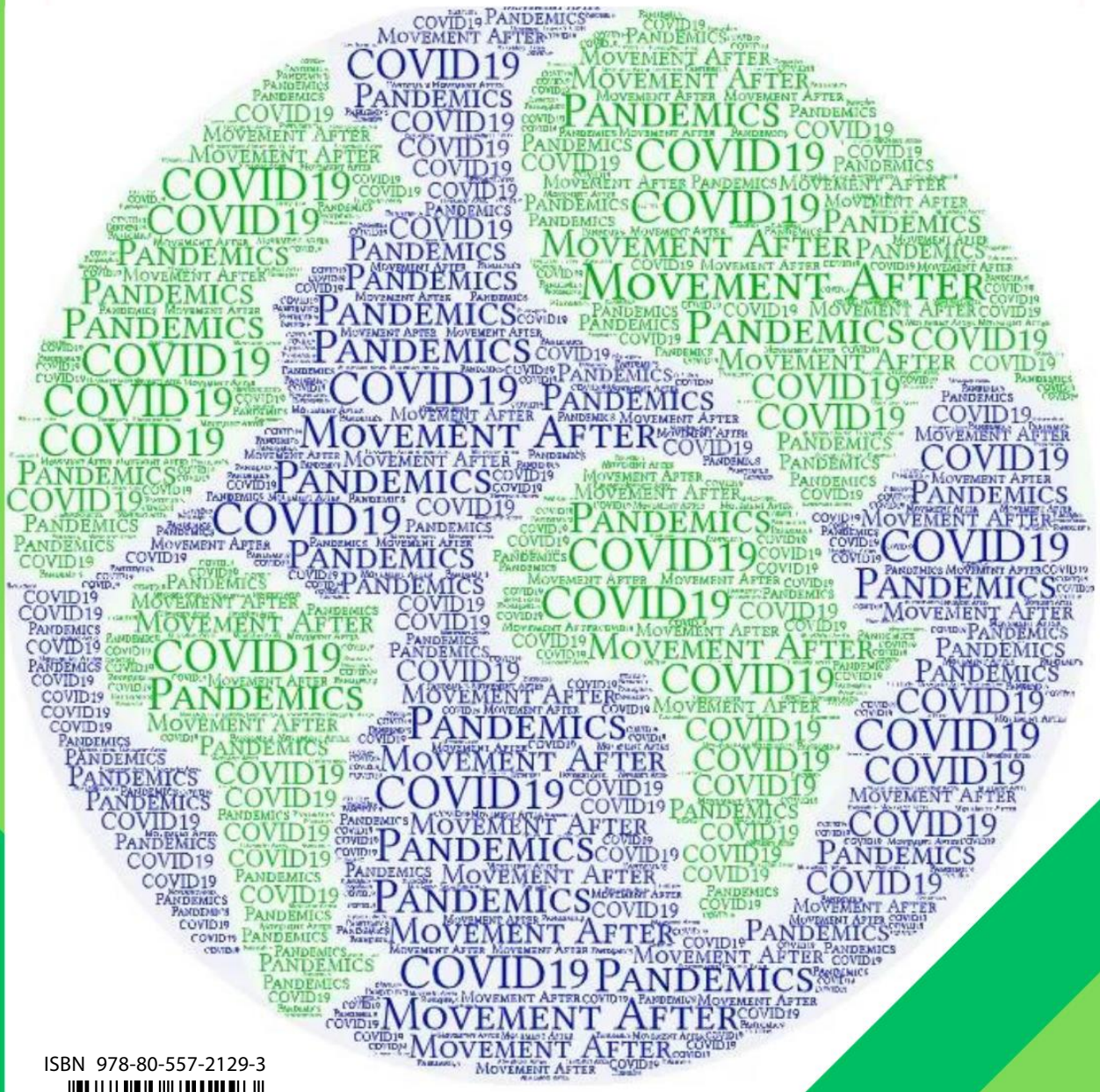
Co-funded by the European Union

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them”.

Collection of abstracts The movement activity enhancement after the COVID19 pandemics

Online version
Page range 53 pages
Edition first
Published by Belianum – Publishing House of Matej Bel University in Banská Bystrica
Banská Bystrica, 2024

ISBN 978-80-557-2129-3
EAN 9788055721293
https://doi.org/10.24040/2024.9788055721293



ISBN 978-80-557-2129-3