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THE RELATIONSHIP BETWEEN WORK-RELATED STRESS, BURNOUT AND AEROBIC CAPACITY AMONG PHYSIOTHERAPISTS

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Keywords: physiotherapists, work-related stress, burnout, aerobic capacity.

Summary
Medical professionals experience more work-related stress than other specialties, furthermore, many results of different researches have shown that the level of stress continues to grow. When stress persists, it becomes chronic and negatively affects a person's physical and mental health. Work-related stress is associated not only with burnout, exhaustion, but also with increased morbidity, chronic diseases and especially with cardiovascular disorders. The aim of our research was to determine the relationship between work-related stress, burnout and aerobic capacity among physiotherapists. The research included 30 participants, who completed two questionnaires about stress and burnout and performed two tests for aerobic capacity evaluation. 80 percent of physiotherapists were experiencing low, medium or high level stress. Burnout was found in 23 percent of participants. 64 percent of subjects' aerobic capacity was evaluated as average and 16 percent of subjects had poor and very poor aerobic capacity. 20 percent of the participants' tonus of sympathetic part of autonomic nervous system was normal and they were considered healthy, but not physically trained. After statistical analysis there was no statistically significant relationship found between physiotherapists' stress or burnout and aerobic capacity.

Introduction

Stress is a psychological and physiological response to changes in the environment and harmful factors [1]. Work–related stress occurs when job-related factors interact with individual factors [2]. Psychosocial and work stress risk factors have been identified as one of global problems and it is the second most common health complaint among workers. Medical professionals experience more work stress than other specialties, furthermore, many studies' results have shown that the level of stress continues to grow [3,4]. When stress persists, it becomes chronic and negatively affects a person's physical and mental health, it is becoming difficult for a person to get rid of stress which results in changes in a person's psychological and/or physiological condition and leads to illness [1, 4].

Burnout syndrome is the result of chronic stress. It is a specific type of occupational stress and involves symptoms of emotional exhaustion, depersonalisation, and reduced feelings of personal accomplishment [5,6]. It is a syndrome that is common among those working in the helping professions and is thought to be the result of the ongoing emotional demands associated with these occupations [7].

The long-term effects of stress are usually a major factor in emotional exhaustion, manifested by decreased enthusiasm for work, helplessness, and feelings of fatigue. Also, long-term stress leads to depersonalization, which is described as indifferent attitude towards patients and negative attitude towards colleagues or profession, separation, loss of personal achievements - when a person loses the sense of being responsible for their work [8,9]. This is most common among individuals who work directly with other people [10].

Physiotherapists face with staff deficiency, high workloads and different tasks at the same time in their work. They place too high demands on themselves and this can lead to a conflict between clinical reality and personal ideals [11]. Burnout syndrome among physiotherapists exists not only in emotional exhaustion, accompanied by a strong sense of frustration and failure, but also in a loss of self-confidence, which lead to decreased concern about the patients [5,9]. It has also been observed that young physiotherapists are more likely to experience work-related stress. Lack of support and situation management from managers, organizational problems, high demands from the government and patients, lead to increasing levels of stress among physiotherapists. Stress, burnout and misunderstanding of their negative effect affect physiotherapists' health and productivity [12].

Work-related stress is associated not only with burnout,

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exhaustion, but also with increased morbidity, chronic diseases and especially with cardiovascular disorders [13]. Persons' aerobic capacity is closely related with health and especially with cardiovascular system status. Low level of aerobic capacity is a risk factor for morbidity, disability and premature mortality from cardiovascular disease [14]. Mc Cormick at al. (2015) in their study showed that psychological fatigue reduces persons' aerobic capacity while people with higher aerobic capacity have lower cardiac reactivity to stressors and have better cardiovascular regeneration [15].

Although the number of studies on work-related stress and burnout has increased significantly, there is still a lack of research on how they affect aerobic capacity.

The aim of the research: to determine the relationship between work-related stress, burnout and aerobic capacity among physiotherapists.

Research methodology

The study involved 30 (23 women and 7 men) physiotherapists working in two different Vilnius hospitals. The mean age of the subjects was 34.03±10.49 year. The average work experience was 10.47 ± 8.84 year. 5 physiotherapists worked in the inpatient rehabilitation unit and 25 subjects in the outpatient rehabilitation unit. Exclusion criteria: 1) pregnancy, 2) any injuries or medical conditions that prohibit exercise, 3) cardiovascular disease, previous heart surgeries, arrhythmias, or history of myocardial infarction, 4) workload less than 0.5 full-time, 5) less than one year of work experience.

The research included 2 questionnaires: The Workplace Stress Scale [16] and Burnout Questionnaire [17]. The Workplace Stress Questionnaire consists of 8 questions, rated from "never" (1 point) to "very often" (5 points). Burnout Questionnaire consist of 28 questions each rated from "never or no change" (1 point) to "always or much change" (5 points).

Aerobic capacity was evaluated using Ruffier Index [18,19]. Before the Ruffier test participants were instructed to sit and rest for 5 minutes. Resting heart rate (HR) was collected at the end of 5 minutes (P1). Then participants were asked to complete 30 squats in 45 seconds, paced by a metronome. The squatting required moving up and down, bending the knees to a 90 degree angle, while keeping the back straight and the arms extended straight forward. HR was collected immediately after the squats (P2). Upon completion of the squats, participants were asked to sit and recover for one minute. A third measurement of HR was obtained at one minute post-test (P3). Based on the three HR measurements, the Ruffier Index (RI) was calculated as: RI = (P1 + P2 + P3 - 200) / 10; Ruffier Index value: less than 0 - excellent, from 0 to 5 – very good, from 5 to 10 - average, from 10 to 15 – poor, more than 15 – very poor cardiovascular endurance.

Blood circulatory system was evaluated using Orthostatic Sample. During the Orthostatic Sample participants were asked to rest on back for 5 minutes, then one minute HR was measured. Then they were asked to stand up and after standing still for a minute the heart rate was measured again.

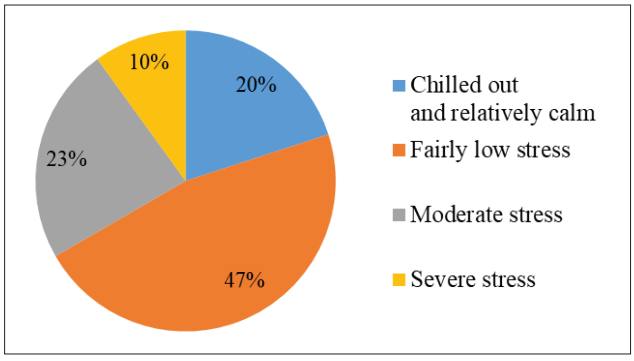

Figure 1. Subject's distribution according to work-related stress level

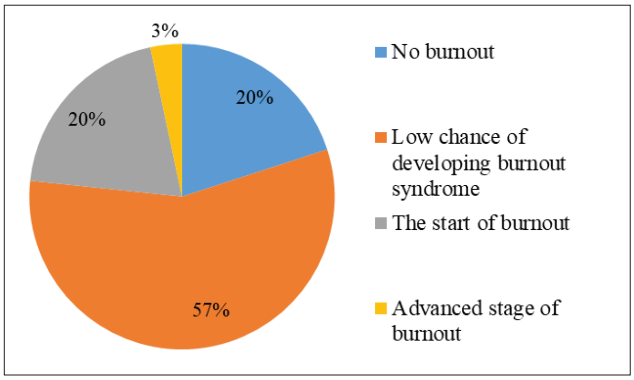

Figure 2. Subject's distribution according to stage of burnout

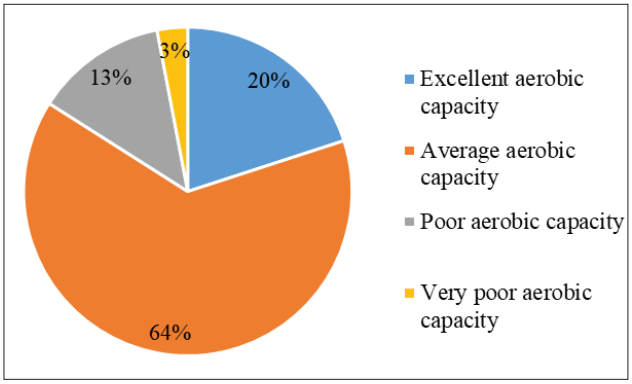

Figure 3. Subject's distribution according aerobic capacity based on Ruffier Index

The heart rate and heart rate variability give conclusions about the functional state of the autonomic nervous system. If standing HR increase in 12-18 beats per minute (BPM) compared to the resting HR than the tonus of sympathetic part of autonomic nervous system is normal, the person is considered healthy, but not physically trained. If HR change from 0 to 12 BPM the tone of the sympathetic part is decreased, the person is considered healthy and physically trained. If HR increase more than 18 BPM the tone and irritability of sympathetic nervous system is increased and person has a risk of cardiovascular disease [20].

Statistical data analysis was carried out using IBM SPSS Statistics for Windows 23.0 and Microsoft Office Excel 2013 software packages.

Results and their discussion

Assessing the level of work-related stress of physiotherapists, we found that the average stress was 19.17±4.17 points, the minimum value was 12, the maximum was 29 points. After analyzing the points on the stress scale, we found that 6 subjects didn't fell stress, they felt relaxed and relatively calm at work. 14 participants experienced low, 7 experienced moderate and 3 participants experienced severe level of stress (Fig.1).

After analysing the questionnaire we found that 20 subjects thought they had too much work and / or deadlines, 14 persons felt that work had a negative effect on their physical or emotional state, and they also found it difficult to express feelings and opinions about working conditions to the supervisor. All subjects stated that they put adequate efforts into the tasks at work and feel that they control the situation. 27 physiotherapists mentioned that they use their skills and talents at work to the maximum.

After analysing the data of the questionnaire we found that the average burnout was 62.5±13.03 points, the minimum value was 43, the maximum – 92 points. 6 physiotherapists had no burnout syndrome, 17 had a low chance of developing burnout and 7 persons already had burnout (Fig.2). The most common reason for burnout was low salary, as well as constant time tracking and contact with angry patients. Participants stated that they often feel underestimated, feel lack of support from supervisor and professional union and they also complained about their health status.

After analysing the Ruffier Index of physiotherapists we found that average value was 7.47±3.54 points, minimum value was 0.8 and maximum – 16.4 points. Based on Ruffier Index, 6 participants had a high level of aerobic capacity, 19 participant's aerobic capacity was evaluated as average and 5 participants had poor and very poor aerobic capacity (Fig.3).

After evaluating the status of circulatory system of the subjects with the Orthostatic Sample we found that the average value of this indicator was 7.2±5.79 points, the minimum value was 0, and the maximum value was 16 points. According to the results the tone of the sympathetic nervous system of 24 persons was evaluated as decreased and that mean they were healthy and psychically trained. 6 of the participants had a normal nervous system tonus which means they were conditionally healthy, but were not physically trained.

Table 1. Relationships between physiotherapists' work-related stress, burnout, Ruffier Index and Orhostatic Sample
r – Pearson's correlation coefficient; r_s – Spearman's correlation coefficient; p - statistical significance.

Index	Ruffier Index	Orthostatic Sample
Work-related stress	r = 0.125 p = 0.511	r_s = 0.176 p = 0.352
Burnout	r = 0.191 p = 0.313	r_s = 0.169 p = 0.372

In order to find out the relationship between the variables, we performed a correlation analysis. We found that there was a very weak but statistically insignificant relationship between work related stress and the Ruffier Index also between the burnout and the Ruffier index ($p > 0.05$). Also we found a very weak but statistically insignificant relationship between stress and the Orthostatic Sample and between burnout and the Orthostatic Sample ($p > 0.05$) (Table 1).

Conclusions

80 percent of physiotherapists were experiencing low, medium or high level of stress. Burnout was found in 23 percent of participants. According to Ruffier Index 64 percent of subjects' aerobic capacity was evaluated as average and 16 percent of subjects had poor and very poor aerobic capacity. Based on an Orthostatic Sample results 20 percent of the participants' tonus of sympathetic part of autonomic nervous system was normal and they were considered healthy, but not physically trained. After statistical analysis there was no statistically significant relationship found between physiotherapists' stress or burnout and aerobic capacity.

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KINEZITERAPEUTŲ DARBE PATIRIAMO STRESO, PERDEGIMO IR AEROBINIO PAJĖGUMO SĄSAJOS

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Raktažodžiai: kineziterapeutai, stresas darbe, perdegimas, aerobinis pajėgumas.

Santrauka

Medicinos darbuotojai patiria daugiau su darbu susijusio streso, nei kitų specialybių atstovai. Daugelis tyrimų rodo, jog ši tendencija didėja. Ilgą laiką trunkantis stresas tampa lėtiniu ir neigiamai veikia žmogaus fizinę ir psichinę sveikatą. Su darbu susijęs stresas siejamas ne tik su perdegimu ar išsekimu, bet ir su padidėjusiu sergamumu lėtinėmis, ypač širdies ir kraujagyslių sistemos ligomis. Tyrimo tikslas buvo nustatyti sąsajas tarp kineziterapeutų darbe patiriamo streso, perdegimo ir aerobinio pajėgumo rodiklių. Tyrime dalyvavo 30 asmenų, kurie užpildė du klausimynus apie darbe patiriamą stresą bei perdegimą, atliko aerobinio pajėgumo testus. 80 proc. kineziterapeutų patyrė mažą, vidutinį ar didelį stresą. Perdegimas nustatytas 23 proc. dalyvių. 64 proc. tiriamųjų aerobinis pajėgumas buvo vidutinis, o 16 proc. – prastesnis nei vidutinis. 20 proc. dalyvių nervų sistemos simpatinės dalies tonusas buvo normalus ir jie buvo laikomi sveikais, tačiau fiziškai netreniruotais asmenimis. Atlikus statistinę analizę, statistiškai reikšmingų sąsajų tarp kineziterapeutų darbe patiriamo streso, perdegimo ir aerobinio pajėgumo nenustatyta.

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