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Selected occupational burdens of masseur's job – research report

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Abstract:

Introduction: Aim of the work is to analyze the burdensomeness of masseurs professional activities. Material and methods: Five massage standards were selected. The subjectively perceived level of physical and mental effort during massage was determined. The PWC170 test was used to measure physical fitness, and the intensity of physical exercise associated with the massage was determined. Statistics: Student's t-test and Fisher's test were used. Results: Women and men were characterized by medium/high levels of physical capacity (men:

3.70±0.82 l/min, women 2.21±0.34 l/min). Men's loads during massage was low (HR=87.49±1.748, which corresponded to 44.21±1.04% HRmax, VO2max=19.03±1.48, VO2=0.69±0.14 and 2.69±0.83 MET). The women performed work with moderate heart rate (HR=84.8±6.88, which corresponds to 44.18±3.67% HRmax, VO2max=18.99±5.24, VO2=0.43±0.162 and 2.16±0.86 MET). Respondents assessed their work as hard. The results suggest that massage and physical therapists had similar levels of fitness, but women differed significantly. Conclusions: Massage therapists of both sexes have similar opportunities to perform their profession. Difficulty in performing is caused the external working conditions and therapist strength.

Keywords: physical capacity, standards of massage, physical burden, psychological burden

Abbreviations

BMI	Body Mass Index
HR	Heart Rate
MET	Multiple Resting Metabolic Equivalent
VO_2max	Maximal Oxygen Uptake
PWC_{170}	Physical Work Capacity
WHO	World Health Organization

1. Introduction

The job of masseur is undertaken both by individuals who specialize solely in this profession and by physiotherapists. In their profession they frequently offer standards that can markedly strain their bodies [1-4]. Therefore, it can be assumed that physical exercise is a typical component of this profession, both in men and in women [5-7]. The present extent of masseur's work expands dynamically, and individuals performing this job frequently face new tasks, previously not performed or even unknown. The standards of massage are performed as forms of therapy or preparation to other therapeutic procedures. Also, especially in developed countries, massage can be a form of biological renewal and relaxation, and is frequently offered commercially on patient's demand [8]. Consequently, individuals undertaking the job of masseur have to gain respective skills to a largest possible extent, as well as acquire new techniques used by modern medicine. Irrespective of the used classification of massage forms, each of them requires proper physical and mental predispositions of involved personnel; similar to a physiotherapist's job, working as a masseur requires certain physical effort [5,9]. This statement is disturbing because the motor skills of people undertaking studies for this profession have been found to be deteriorating [10,11].

Studies of exercise burden associated with physiotherapist's job revealed that although the therapeutic standards of this profession are widely considered burdensome, in fact they represent work associated with moderate intensity exercise [2,3]. The only dynamic activities performed by physiotherapists refer to neurosurgical departments, which classifies their work as moderately hard; the occupational burden at other workplaces is rather low [12]. However, these observations were not confirmed by the subjective opinion of people performing this work, who perceived their work as highly burdensome, in line with the opinion of wider social groups [1-3,13].

Consequently, it is assumed that the burdensomeness of work does not necessarily correspond to the intensity of exercise itself but rather to a subjectively assessed or objectively measured response to exercise whose intensity exceeds the limits of optimal burden, or to work of optimal intensity but performed under the conditions which cannot be considered optimal [14]. Literature data show that despite the moderate intensity of work, there are threats to the health of therapists [15-17]. Hence, another attempt to analyze the previously identified problem, but from a slightly different perspective.

Taking into account the abovementioned evidence, we decided to analyze the subjectively perceived level of burdensomeness associated with performing basic standards of massage, as well as the response of masseurs' organisms to the loads associated with the most intense form of their professional activity. We assumed that the job of masseur requires hard work, and although the physical capacity of individuals performing this job is relatively high, it is also individually variable. We expected that female masseurs are characterized by lower physical capacities than males. Moreover, we supposed that the physical capacity of a masseur is similar to that of physiotherapist, and exerts obvious effect on the comfort of performed work. Therefore, we assumed that the job of masseur requires certain psychophysical and motor predispositions.

The following main research problems and hypotheses can be identified.

Research Problems.

1. What is the subjectively perceived level of physical and mental strain associated with performing basic massage standards by masseurs?
2. What is the physical capacity of masseurs and how does it affect their work performance?
3. How does the intensity of effort associated with performing complete classical massage relate to objectively measured work load?
4. How does the work load of masseurs compare to that of physiotherapists?

Hypotheses.

1. It was assumed that the job of a masseur requires hard work, and the physical capacity of individuals performing this job is relatively high, but individually variable.
2. It was expected that female masseurs would be characterized by lower physical capacities than male masseurs.

3. It was supposed that the physical capacity of a masseur is similar to that of a physiotherapist and has an obvious effect on the comfort of performed work.
4. It was assumed that the job of masseur requires certain psychophysical and motor predispositions.
5. A discrepancy was expected between the subjectively assessed burdensomeness of work and the objectively measured physical effort associated with performing massage.

The researchers hypothesized that despite the moderate intensity of work, there are threats to the health of therapists related to long-term performance of this work under specific conditions.

2. Material and Method

The study included 12 men and 10 women between 22 and 56 years of age, employed at hospital wards with rehabilitation subunits and in public and non-public healthcare units of Pomerania and Kuyavia region.

We conducted a survey referring to the job of masseur, subjectively perceived physical and mental strains associated with performing basic occupational standards, frequency of the latter, and environmental occupational conditions. We used a questionnaire of our own design which contained solely closed questions. Respondents indicated the self-perceived severity of strain on a 100 mm scale, to a certain extent corresponding to the percentage utilization of their maximal physical and mental capacity. The subjective assessment of strain pertained to complete and partial classical massage, lymphatic drainage, segmental massage, and vibration massage.

2.1. Anthropometrics. Body height was measured using an electronic scale with height meter WPT/o 150 C (from RADWAG) in a standing position to the nearest 0.1 cm, and body weight was measured to the nearest 0.1 kg.

2.2. Procedures. In order to determine the physical capacity of studied men and women we considered their age, as well as body weight and body height which were used to calculate the Rohrer index. Moreover, we determined heart rate at rest, and performed a PWC_{170} exercise test [18,19]. We used a Monark 915 type cycle ergometer enabling the adjustment of exercise strain. Heart rate during the exercise was monitored with a Polar S 410 Heart Rate Monitor, and the relative rate of oxygen consumption at exercise intensity corresponding to pulse up to 170 beats per minute was calculated according to EUROFIT Test [20]. Using the result of the PWC_{170} test and the Astrand-Ryhming nomogram, we estimated maximal oxygen uptake as a measure of present physical capacity [20].

The strain of examined masseurs was determined on the basis of their heart rate after reaching a relative functional equilibrium, i.e. after performing complete massage for about 7 minutes [18,21]. Mean heart rate during performing this standard and the result of exercise test enabled us to estimate the relative intensity of exercise, expressed as percentage of VO_2max utilization and in MET. Overall intensity of work associated with performing complete massage was determined on the basis of these values [18,22,23] and compared to the classification of occupational strains defined in view of the rules of occupational hygiene and ergonomics [5].

Moreover, we compared the work intensity between studied men and women on the basis of the volume of their oxygen uptake, VO_2 (ml/kg/min).

2.3. Statistical analysis. The results of the study are presented in the form of arithmetic means and standard deviations, put together in tables and figures. To assess significant differences between mean values of the subjective feeling of mental stress and physical stress of subjects, Student's t test was used. Fisher's t test was used to evaluate differences in average levels reflecting performance of examined subjects and previously observed physical therapists, as well as the characteristics of intensity associated with implementation of complete body massage and gait learning, as the most overloading standard of physiotherapist body [24]. Statistical analysis was performed at the significance level $\alpha = 0.05$ and $\alpha = 0.01$.

Used Statistical Program Statistica 13, licenced to Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruń, Poland.

The article employed several statistical inference methods. Here's a detailed description of the methods used.

1. Student's t-test. Application. To assess the significance of differences between mean values of subjective feeling of mental and physical stress of the subjects. Details. Independent samples t-test was used to compare results between the group of men and women. Significance levels: Two levels of significance were applied. * $p < 0.05$ (marked ** in tables); * $p < 0.01$ (marked * in tables).

2. Fisher's t-test. Application. To evaluate differences in average levels reflecting performance of examined subjects and characteristics of intensity associated with implementation of complete body massage and gait learning. Details. This test was used to compare results between the studied masseurs and previously observed physiotherapists.

3. Descriptive statistics. Arithmetic mean and standard deviation were used to present results in all tables.

4. Comparative analysis. Applied to compare the results of PWC170 test (W/kg) and VO2max (ml/kg/min) between men and women. Also used to compare capacity and exercise intensity between studied masseurs and previously studied physiotherapists.

5. Estimation of physiological parameters. The Astrand-Ryhming nomogram was used to estimate maximal oxygen uptake (VO2max) based on PWC170 test results.

6. Calculation of relative exercise intensity. Expressed as a percentage of VO2max utilization and in MET units (metabolic equivalent).

7. Correlation analysis. Although not explicitly stated in the article, it can be assumed that correlation analysis was conducted between various measured parameters, such as physical capacity and subjective feeling of burden.

8. Significance levels. Significance levels of $\alpha = 0.05$ and $\alpha = 0.01$ were used in statistical analyses.

9. Critical values. For the Student's t-test, critical values were provided. * For $\alpha = 0.05$ and 20 degrees of freedom: $t = 2.09$. * For $\alpha = 0.01$ and 20 degrees of freedom: $t = 2.84$.

10. Graphical representation. Although not directly a method of statistical inference, results were presented in table form, facilitating data interpretation.

It's worth noting that the authors did not apply more advanced statistical methods such as analysis of variance (ANOVA) or regression analysis, which could have provided additional information about relationships between the studied variables. The methods used are appropriate for the study's objectives and allow for drawing important conclusions about the workload of masseurs.

3. **Results**

Basic morphological characteristics of examined group are presented in Table 1.

Table 1. Morphological characteristics of the participants (mean ± SD).

Feature	Men (n=12)	Women (n=10)
Age (years)	28.83± 3.24	29.03±2.86
Body height (cm)	174.17±5.54	169.90±3.28
Body mass (kg)	76.17±10.23	56.40±3.47
Rohrer index	1.44±0.22	1.15±0.17

Women were slightly older than men and showed markedly lower variability of age. Males were also characterized by higher variability of morphological measurements and significantly higher mean Rohrer index. Moreover, our findings suggest that the degree of physical development in examined masseurs differed slightly from respective population-based average. Perhaps this difference corresponded to a trace of morphological predisposition to masseur’s profession.

The levels of subjectively perceived mental and physical strain of examined masseurs associated with performing basic professional standards are presented in Table 2.

Table 2. Subjectively assessed burdensomeness associated with performing basic standards of massage (%).

Standard	Type of burden	Men (n=12)	Women (n=10)	D	t
Complete classical massage	psychological	26.7±11.74	52.4±13.51	25.7	4.55118*
	physical	71.7±14.82	83.7±6.43	12.0	2.34346**
Partial classical massage	psychological	23.7±9.80	45.0±8.16	21.3	5.21721*
	physical	62.4±9.68	67.1±10.89	4.7	1.02130
Lymphatic drainage	psychological	23.7±9.80	50.8±10.78	27.1	5.88343*
	physical	62.4±9.68	64.0±9.66	1.6	0.36841
Segmental massage	psychological	15.3±6.71	40.5±6.43	25.2	8.52279*
	physical	45.8±5.15	62.5±9.46	16.7	5.00689*
Mechanical vibration massage	psychological	17.9±4.98	44.0±6.99	26.1	9.72228*
	physical	38.3±5.77	64.0±13.70	25.7	5.62605*

**significantly different at $p<0.05$, and alpha 20 t = 2.09

*significantly different at $p<0.01$, and alpha 20 t = 2.84

Analysis of the abovementioned data revealed that aside from physical strain associated with partial classical massage and lymphatic drainage, men and women differed significantly in their average scores.

Nevertheless, both male and female masseurs considered complete classical massage as the most burdensome standard, especially with regards to the physical strain. In the case of men, mental strains proved markedly lower than the physical strains. Moreover, men declared that physical and mental strain associated with segmental massage and vibration massage were markedly lower compared to other analyzed standards. In women, differences between mental and physical strain proved markedly lower than in men. Aside from complete classical massage, which was associated with the highest strains, the relative differences between physical and mental strain experienced by women during performing other standards were similar.

The results of functional tests are presented in Table 3. Despite otherwise expected individual variability of measurements, our findings point to a relatively good cardiovascular capacity of male and female masseurs. Comparative analysis of the results of PWC_{170} test (W/kg) and VO_2max (ml/kg/min) revealed that men showed higher capacity than women. The differences between mean values of this parameters in male and female masseurs (D = 1.03, t = 3,92753; D = 11,03, t = 6,36496) proved significant at α=0.01.

Table 3. Results of functional tests (mean ± SD).

Parameter	Men (n=12)	Women (n=10)
Resting HR (beats/min)	77.83±8.47	62.70±7.32
HR max (beats/min)	197.90 ± 1.68	191.97±7.32
Result of PWC_{170} test (W)	229.29±33.53	114.52±22.26
Result of PWC_{170} test (W/kg)	3.07±0.67	2.04±0.46
VO_2max (l/min)	3.70±0.82	2.21±0.34
VO_2max (ml/kg/min)	50.47±16.58	39.44±2.09

Despite observed differences men and women showed similar responses to strain associated with complete classical massage (Table 4).

Table 4. Relative increase in heart rate (%HR max), maximal oxygen uptake (%VO_2max, VO_2 l/min, VO_2 ml/kg/min), and multiples of resting metabolic rate (MET) in men and women performing complete classical massage.

Parameter	Men (n=12)	Women (n=10)
%HRmax (beats/min)	44.21±1.04	44.18±3.67
%VO_2max	19.03±1.48	18.99±5.24
VO_2 (l/min)	0.69±0.14	0.43±0.16
VO_2 (ml/kg/min)	9.42±2.92	7.58±3.00
MET	2.69±0.83	2.16±0.86

Both men and women showed similar average heart rate, corresponding to extremely low intensity of exercise.

Irrespective of gender, performing the analyzed standard of massage was also associated with a similar degree of utilization of maximal oxygen uptake. Both men and women utilized less than half of VO_2max, which also corresponded to a very low intensity of exercise. We obtained similar results analyzing the intensity of work on the basis of estimated relative utilization of HRmax, VO_2max, and multiples of resting metabolic rate (MET) (Table 4).

The capacities of studied men and women and intensity of their exercise during complete classical massage were compared to relevant characteristics of previously examined physiotherapists performing the most burdensome standard, i.e. verticalization of patients and teaching them to walk. The results of this comparative analysis are presented in Table 5.

Table 5. Comparative analysis of physical capacity indices characterizing the studied group and previously examined physiotherapists, along with the intensity of exercise associated with performing the most burdensome professional standard.

Group/ parameter	Men (M; n=12, P; n=8)			Women (M; n=10, P; n=12)		
	mean ± SD	D	t	mean ± SD	D	t
VO_2max (l/min)						
masseurs – M	3.70±0.82	0.10	0.30400	2.21±0.34	0.49	2.51045**
physiotherapists – P [24]	3.60±0.40			2.70±0.50		
VO_2max (ml/kg/min)						
masseurs – M	50.47±16.58	8.72	1.31825	39.44± 2.09	5.71	1.97849
physiotherapists – P[24]	41.75 ± 7.76			45.15 ± 8.49		
VO_2 (ml/kg/min)						
classical massage	9.42±2.92	2.48	1.69832	7.58±3.00	6.42	3.24470*
walking training [24]	11.90±3.20			14.00±5.30		

**significantly different at $p<0.05$, alpha 18 t = 2.10, and alpha 20 t = 2.09
*significantly different at $p<0.01$, alpha 18 t = 2.88, and alpha 20 t = 2.84

Data presented in the Table and Figure mentioned above suggests that male masseurs and physiotherapists were characterized by similar level of capacity, while female representatives of these two professions differed significantly at α=0.05. It should be noted, however, that the relative capacity of male and female physiotherapists considered as a reference group was similar. Nevertheless, the most burdensome type of massage represented relatively lower strain for female masseurs than the most burdensome standard performed by female physiotherapists. This was confirmed by the difference in the volume of oxygen uptake (ml/kg/min) which proved statistically significant at α=0.01.

4. Discussion

Analysis of our findings explained some basic problems and revealed several issues which should be discussed in detail in view of current knowledge and literature evidence.

1. Standards of masseur's work are associated with a relatively large, albeit varying in subjective assessment, physical burden of body, especially in women; additionally, women perceive mental burden to a markedly greater extent than men.
2. The groups of men and women included in our study were characterized by extremely different types of body structure and relatively high capacity. Nevertheless, the latter parameter was lower in female masseurs than in males.
3. The capacity of studied masseurs is similar as in previously examined physiotherapists. Both men and women considered the most burdensome standard of massage as a light work. The response of male and female masseurs to procedures which were perceived as most burdensome by previously examined physiotherapists, i.e. verticalization and training of walking, was similar and less pronounced, respectively.

We revealed that the job of masseur includes standards which, despite objectively confirmed low intensity of exercise, may constitute relatively large occupational burden for individuals performing this profession, particularly for women. These standards are characterized by endurance-type exercise, which can be classified as hard work from the viewpoint of hygiene and ergonomics, due to its volume, duration, frequency, and conditions of performing, i.e. forced and atypical position of body, frequently associated with pain [15-17,25-27]. This was partially confirmed by the subjective assessment of burdensomeness of standards included in our study, which was different in men and women, especially regarding the mental sphere. Moreover, the subjectively assessed burdensomeness in the physical sphere proved markedly higher than the objectively determined intensity of exercise. The feeling of exploiting one's maximal capacity during realization of standards included in our study was experienced by 71.7% of men and 83.7%. Functional studies revealed that the analyzed burden corresponded to nearly 45% HRmax, 20% VO_2max and 2,5 MET of examined men and women. In accordance with WHO guiding principles, the burden formulated in MET is smaller than that appearing during a moderate physical activity e.g.: a quick walk, dance or garden work [28].

Therefore, the results of our study do not differ significantly from data published previously by B. Bilski or the findings of A. Ksykiewicz-Dorota and E. Zając, both referring to the job and work of physiotherapists [5,12]. We obtained similar results despite using different methods and analyzing masseurs from healthcare units demanding different specificity of work than in previously mentioned studies [2,3,24]. Also the fact that previous studies of physiotherapists referred to the overall energetic expenditure during the whole day of work, and in most cases included activities characterized by short-term dynamic work, should be considered during the comprehensive assessment of burdensomeness associated with masseur's job [12]. In contrast, our study examined a selected standard of massage, characterized by a large proportion of long-term, endurance-type exercise.

Despite using the same methods of measurement, the intensity of exercise associated with the standard included in our study slightly differed from that analyzed in previous research on physiotherapists [2,3,24]. Nevertheless, it can be the reason behind the greater psychological burden with resultant cardiovascular response which was observed in our group, especially in

women [14,18]. Such interpretation is supported by relatively weak body structure of examined female masseurs, as both the body structure and proper level of physical fitness determine one's ability to perform a job which is typically associated with physical exercise [5,25,26]. The values of Rohrer's index determined in our participants suggest that men and women were characterized by picnic and leptosomatic types, respectively, the latter not predisposing to hard physical work. Therefore, this finding constitutes further indirect confirmation of our previously mentioned interpretation.

Studied groups of men and women differed significantly in terms of physical capacity determined during PWC_{170} test. While the physical capacity of males was interpreted as high, women scored moderately in this test. This suggests that the overall level of physical capacity of female masseurs is less satisfactory than in males. This observation is even more alarming in the context of the body structure of studied women and suggests that particular attention should be paid to adjust the occupational burden of female masseurs to their physical abilities. However, as mentioned previously in the report on physiotherapists, in the case of professions associated with physical exercise, the biological value of workers shows a perceptible trace of indirect selection resulting from the choice of a given job or its conditions. This may suggest that therapists with poorer physical conditions and lower level of physical fitness do not choose the workplaces where working is associated with a marked burden [24,25]. Therefore, our present findings may suggest that female masseurs are exposed to smaller physical burden. This is suggested both by the results of comparative analysis of relative ability of oxygen consumption in studied female masseurs and the reference group of female physiotherapists, as well as by the significant difference in the relative work overload associated with performance of the most demanding occupational standards. In the case of studied female masseurs, complete classic massage proved a markedly smaller burden than the training of patient's walking in previously studied female physiotherapists, characterized by higher maximal capabilities of oxygen consumption. Consequently, our findings suggest that the job of masseur, the standards of which are frequently performed or undertaken by physiotherapists, seems a slightly lighter form of work. However, performing it for a long time may pose a threat to the therapist's health [15-17].

Analyzing the relative intensity of physical exercise associated with basic occupational standards in the studied group of masseurs and the reference group of physiotherapists, one should consider differences in health status and morphological characteristics (especially body height and weight) of treated patients, as these parameters can alter the strain associated with the same therapeutic procedure. Comprehensive analysis and interpretation of findings should also consider the type of used research methodology, as using other methods can be reflected by slightly different results [29, 30]. Therefore, our findings presented here are by no means exhaustive but only represent another stage of comprehensive research on occupational strain related to masseur's job. Nevertheless, they can serve as a road sign, both for the leaders of therapeutic teams and for masseurs themselves, as well as for individuals undertaking masseur's training.

How the null and alternative hypotheses were likely formulated and tested, based on the information provided.

Hypothesis Verification Process. 1. Null Hypothesis (H0) and Alternative Hypothesis (H1). For each statistical test (Student's t-test and Fisher's t-test), the hypotheses were likely formulated as follows. H0. There is no significant difference between the means of the two groups being compared (e.g., men vs. women, masseurs vs. physiotherapists). H1. There is a significant difference between the means of the two groups being compared.

2. Significance Levels. The study used two significance levels. $\alpha = 0.05$ (5% significance level). $\alpha = 0.01$ (1% significance level).

3. Decision Rule. The null hypothesis would be rejected if the calculated t-value exceeded the critical t-value for the given degrees of freedom and significance level.

4. Results and Interpretation. The article presents several comparisons. a) Subjectively assessed burdensomeness (Table 2). For complete classical massage (psychological burden). Calculated t = 4.55118*. This exceeds the critical value at $\alpha = 0.01$ (2.84). Result: Reject H0, accept H1. There is a significant difference between men and women. b) Physical capacity (Table 5). For VO2max (l/min) in women. Calculated t = 2.51045**. This exceeds the critical value at $\alpha = 0.05$ (2.09) but not at $\alpha = 0.01$ (2.84). Result: Reject H0 at $\alpha = 0.05$, accept H1. There is a significant difference between masseurs and physiotherapists. c) Exercise intensity (Table 5). For VO2 (ml/kg/min) in women. Calculated t = 3.24470*. This exceeds the critical value at $\alpha = 0.01$ (2.84). Result: Reject H0, accept H1. There is a highly significant difference between masseurs and physiotherapists.

5. Failure to Reject H0. In some cases, the null hypothesis was not rejected. Partial classical massage (physical burden) in Table 2. Calculated t = 1.02130. This does not exceed the critical value at $\alpha = 0.05$ (2.09). Result: Fail to reject H0. There is not enough evidence to conclude a significant difference between men and women.

6. Overall Interpretation. The study found significant differences in many comparisons, particularly between men and women in their subjective assessment of burden, and between masseurs and physiotherapists in their physical capacity and exercise intensity. Not all comparisons yielded significant results.

It's important to note that the article does not explicitly state the null and alternative hypotheses for each test. The interpretation provided here is based on standard statistical practice and the results reported in the article. The researchers used the calculated t-values and predefined significance levels to make decisions about rejecting or failing to reject the null hypotheses. The study employed a rigorous hypothesis testing approach, using different significance levels to indicate the strength of evidence against the null hypotheses. This allowed the researchers to draw conclusions about the differences between groups and the relationships between various factors related to the work of masseurs and physiotherapists.

5. Conclusions

1. The inconsistency between the subjectively assessed burdensomeness of masseur’s work and high physical capacity of examined men and women or very low intensity of exercise related to analyzed standard of massage points to the lack of unambiguous

definition of the burdensomeness of this job, and the necessity of proper adjustment of occupational tasks to physical capabilities of personnel.

2. The documented differences between the objective measures of exercise intensity and its subjective perception suggest that men and women show similar predispositions to masseur's profession, and burdensomeness of the job is also significantly modulated by the external conditions of work and personality traits of an employee which determine his/her capacity.
3. The relative burdensomeness of complete classical massage may hinder performing this standard by individuals characterized by poor physical capacity. Along with inequities in physical fitness observed in studied men and women, this points to the necessity of achieving and maintaining proper level of masseurs' capacity.
4. The level of physical capacity of female masseurs, lower than in previously examined female physiotherapists, points to a trace of motor predisposition to efficient and successful work and suggests that that the job of masseur can be less burdensome.
5. Gender-specific perception of work burden. Female masseurs consistently reported higher levels of both physical and mental strain across all massage types compared to their male counterparts. This suggests a need for gender-specific approaches to workload management and ergonomic interventions in the massage therapy profession.
6. Discrepancy between subjective and objective measures. There is a significant discrepancy between the subjectively perceived workload and the objectively measured physical exertion during massage. This highlights the importance of considering both subjective and objective measures when assessing occupational strain in massage therapy.
7. Influence of body type on work performance. The study revealed that male masseurs tend to have a picnic body type, while females tend to have a leptosomatic body type. This difference in body composition may contribute to the variations in perceived workload and could influence long-term occupational health outcomes.
8. Comparison with physiotherapy. Massage therapy, particularly complete classical massage, appears to be less physically demanding than some physiotherapy tasks (e.g., gait training). However, the prolonged nature of massage work may still pose health risks, suggesting a need for specific preventive strategies in massage therapy practice.
9. Importance of physical fitness. The study underscores the importance of maintaining good physical fitness for massage therapists. Given the discrepancy between perceived and actual workload, targeted fitness programs for massage therapists could help improve their work capacity and reduce the risk of work-related musculoskeletal disorders.

Data Availability

Data on individual measurements of anthropometric and endurance characteristics, used to support the findings of this study may be made available on the researcher's request submitted to the Bioethics Committee of the Nicolaus Copernicus University at the Collegium Medicum Ludwik Rydygier in Bydgoszcz, which you can contact, ul. M. Skłodowskiej- Curie 9,85-094 Bydgoszcz, Poland, tel. 48 52585-35-63, fax 52 585-38-11, e-mail:

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Ethical Approval

A permission to conduct this study was obtained from the Bioethics Committee of the Ludwik Rydygier Collegium Medicum of Nicolaus Copernicus University in Toruń (no. KB 522 and 523/2008). All men and women were informed about the aim of the study, type and duration of the effort, and the possibility to withdraw from the study without giving any reason. Each potential participant granted a voluntary consent for participation in the study.

Consent

Each potential participant granted a voluntary consent for participation in the study.

Disclosure

The research was carried out as part of its statutory activities of the Department of Principles of Physical Culture, Faculty of Health Sciences, Ludwik Rydygier Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University [WN381].

Conflicts of Interest

The authors have no conflicts of interest that are directly relevant to the contents of this manuscript.

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