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PE TEACHERS' WORK ABILITY

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Work ability of Finnish physical education teachers

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Abstract

Background: In the physical education (PE) teachers' profession, physical tasks comprise a large part of their job. They identify their health as good, and they are satisfied with their job. Nevertheless, the work ability of PE teachers may decrease.

Purpose: The purpose of this paper is to explore the work ability of Finnish PE teachers. What disorders or physical problems do PE teachers experience as a result of their job, and how do they affect job satisfaction? Are there differences between men and women or older and younger teachers?

Key findings: Of the Finnish PE teachers ($N=655$), 31% reported that they had at least one disease or disorder that hindered their work ability. The most common were musculoskeletal disorders. PE teachers identified knee and back problems in particular. Good ability to work was related to higher job satisfaction.

Keywords: PE teacher, work ability, PE teachers' work

Introduction

Work ability

Work ability can be defined in many various ways. According to Ilmarinen (1999), work ability includes individual and occupational factors that are essential a person's ability to cope in his or her work life. Work ability is the result of the interaction between an individual's resources (health, functional capacity, education, and know-how) and work. In addition, a person's values and attitudes, motivation, and job satisfaction influence individual resources. Overall, work contribution is based on personal resources, which are influenced by the work community and the work environment. In the teaching profession, the work environment includes facilities and available resources for teaching. The mental and physical demands of work also influence the overall result (Ilmarinen, 1999).

Work ability and its factors can be described in many ways. Individual resources, work-related factors, and work environment can be depicted in the form of the work ability house, its floors, and surrounding environment (Ilmarinen, 2006). The first three floors are the core structure of work ability. The first floor consists of health and functional capacity, including mental and physical health and physical fitness. The second floor contains professional competence, and the third floor motivation, values, and attitudes. The fourth floor is composed of the work environment, work community, and supervision of the work. In the surroundings of the house, there are family and close community such as relatives and friends as well as organizations that support work (occupational health care and safety). Society is the outermost layer, which creates the macro-environment of work ability (Ilmarinen, 2006).

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Maintaining the ability to work is essential for an individual. According to Hasselhorn, Tackenberg and Müller (2003), a high capability to work is accompanied by a longer active work life and is associated with lower cost to the national social system (Seibt, Spitzer, Blank & Scheuch, 2009). According to Tuomi, Huuhtanen, Nykyri and Ilmarinen (2001), decreased work ability increases the risk of premature retirement.

Work ability is related to age. Various factors (work environment, work content, work community as well as the resources of individual workers) influence work ability (Ilmarinen, 2001). The imbalance of functional capacities and work demands is a general problem for aging workers (Bugajska & Łastowiecka, 2005). Work ability can be supported by service and support systems, work and retirement legislation, and changes in values and attitudes (Ilmarinen, 2001).

Work and work ability of PE teachers

The everyday life of physical education (PE) teachers is varied and busy. Lessons can be held in different locations, which is why PE teachers must move many times throughout the school day. The profession includes different tasks, but the main content of PE teachers' occupation is teaching PE or health education (Mäkelä, Hirvensalo, Palomäki, Herva & Laakso, 2012). In the profession of the PE teacher, duties that strain teachers physically include demonstrating technical moves, teaching sports (e.g., aerobics), refereeing, exposure to outdoor conditions (cold, rain, wind, heat), frequent travel between workplaces, or carrying, displacing, and storing heavy objects or equipment (Bizet, Laurencelle, Lemoune, Richard & Trudeau, 2010; Sandmark, Wiktorin, Hogstedt, Klenell-Hatschek, & Vingård, 1999). PE teachers' work environment often includes excessive noise (Jiang, 1997). There might also be mentally stressful moments in the PE teacher profession. For example, disagreement with pupils, parents, peers, or the administration, busy schedules, hurry, and high workload can cause a feeling of insufficiency or burnout (Mäkelä et al., 2012).

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Alongside the physically and mentally stressful elements of teaching PE are also other risk factors such as student violence, broken equipment, and safety spotting of students that are perceived as occupational risks by PE teachers (Lemoune, Laurencelle, Lirette & Trudeau, 2007). Occupational risks have been reported to increase along with age (Kovač, Leskošek, Hadžić & Jurak, 2013a) at 7.6% per year. Likewise, increasing age generally increases the odds ratios for occupational health problems, however at a much lower rate than that for injuries. These were statistically significant especially for musculoskeletal problems (e.g., lower back pain, hip, knee) as well as auditory problems (Kovač, Leskošek, Hadžić & Jurak, 2013b). Studies have also shown that primary school teachers are almost twice as likely as secondary school teachers to identify lower back pain and dysphonia (Kovač et al., 2013b).

Sandmark (2000) studied PE teachers' work ability in Sweden. The PE teachers reported fewer serious diseases and better general health than the control group. Likewise, Trudeau, Laurencelle, and Lajoie (2014) concluded that PE teachers have better physical fitness than the average population. However, PE teachers identified more osteoarthritis of the knee and hip than the control group. Likewise, PE teachers reported higher prevalence of low back pain, and female teachers reported more elbow disorders than the control group (Sandmark, 2000). Lower back pain has also been found to be more common among Japanese PE teachers than among other general education teachers (Tsuboi, Takeuchi, Watanabe, Hori & Kobayashi, 2002). Slovenian PE teachers identified lower back pain as the most common health problem along with voice disorders and auditory problems (Kovač et al., 2013b). In addition, shoulder disorders were reported to be common for PE teachers in a Swedish study (Åstrand, Bergh & Kilbom, 1997). According to Rakovac and Heimer (2008), Croatian PE teachers reported musculoskeletal disturbances were common, as well as respiratory, cardiovascular, and gastrointestinal problems. A total of 62.8% of PE teachers reported having some disorders (Rakovac & Heimer, 2008). Many different movements are

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associated with occupational problems. The most common is the standing position, but flexing the knee, rotating the trunk, picking up objects, jumping, and carrying heavy objects are sources of problems (Lemoune et al., 2007).

The work ability of the Finnish working population has been studied for a long time (Seitsamo, ym., 2011). However, there has been little discussion about the work ability of teachers. What is known about the work ability of Finnish teachers is largely based on studies by Kinnunen, Parkatti and Rasku (1994), Kinnunen and Salo (1994), and Louhevaara, Ilmarinen, Pitkänen and Antikainen (1990). According to Kinnunen et al. (1994), physical education teachers estimated their health was much better than that of their age peers. Instead, PE teachers yielded the poorest work ability group with vocational subject teachers. The work ability of older women was poor in particular. Louhevaara et al. (1990) studied the work ability of Finnish PE teachers older than 45 years of age. The researchers found that 41% of the respondents felt that the physical workload was too hard, and 45% stated that the demands in the work environment were too tough. Nearly two thirds of the respondents stated that they suffered from various musculoskeletal disorders. Nearly one fourth of the respondents identified that the mental load hindered their work ability. A significant effect of age and teaching experience on the rate of chronic disorders has also been found elsewhere (Lemoune et al., 2007).

Over the years, the time allocation for PE in Finland has changed several times and currently is two hours per week in comprehensive school grades 1 to 9 (Heikinaro-Johansson & Telama, 2005). However, in the near future, PE will be increased in the new National Core Curriculum for Basic Education (Finnish National Board of Education, 2014). In Finland, the mean PE teaching hours is 25 hours per week and duties other than teaching total nine hours per week. Organization of PE is generally good, but in some schools, there is a lack of facilities and equipment. In addition, sometimes classes may be too large (more than 25

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pupils). Despite the slightly lower status, PE teachers are satisfied with their jobs (Mäkelä, Hirvensalo, Palomäki, Herva & Laakso, 2012).

The purpose of this paper is to describe the work ability of Finnish PE teachers and to find out the differences in work ability between genders and age groups. In addition, we determined the main diseases and disabilities teachers experience. We hypothesized that teachers' work ability is associated with age and gender. Especially older women have more disorders or diseases than men in older age groups. We further hypothesized that the main problems with work ability among PE teachers are with the knees, hips, shoulders, and back.

Methods

Participants

Association of Finnish Physical and Health educators carried out a study in co-operation with the University of Jyväskylä for PE teachers in Finland. A structured questionnaire was sent to the members of the association (total of 1541). A total of 667 members (male=187, female=480) answered the questionnaire. Of these respondents, 12 were retired. Thus, the final sample was 655 PE teachers (male =186, female=469). Having read the information document that accompanied the questionnaire, the teachers confirmed their informed consent to participate in this research by completing the questionnaire.

Questionnaire

The questionnaire was formed using different questionnaires to form a consistent questionnaire with equal scales for the different aspects of work ability. For physical health, mental health, and work ability, we used questions from the Quality of Life (QOL; Spitzer, et al., 1981); for physical fitness, we used questions from the study by Sollerhed, Apitzsch, Råstam, and Ejlertsson (2008). The work motivation question was based on Dittrich, Büsch, and Micheel's (2011) study, the scale for salary, working conditions, and relations with

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colleagues was developed by Knoop (1994), the administration of the work and professional competence scale based on Bogler's (2001) study, the work environment scale was developed by Feldt (1997), the balance between work and family was based on Valcour's (2007) study, and the stress resilience scale was developed by Delahaij, Gaillard, and Soeters (2011). For the present study, the data were categorized as follows:

- Demographic variables: gender, age group (1=30 years or younger, 2=31–50 years and 3=51 years or older), job contract (1=permanent, 2=terminable, 3=part-time)
- Job description: teaching hours, work hours other than teaching, size of school (1=0–250, 2=251–400, 3=401–550, 4=551–1000)
- Physical and mental health: (i) my fitness is, (ii) my physical health is, (iii) my mental health is, (iv) my stress tolerance is (scale 1=very bad, 2=bad, 3=neither bad nor good, 4=good, 5=very good)
- Work ability: i) my professional competence is, (ii) my work ability is, (iii) my work motivation is (scale 1=very bad, 2=bad, 3=neither bad nor good, 4=good, 5=very good), (iv) do you have a disease or disability that interferes with your work ability (1=yes, 2=no), (v) open-ended questions of diseases or disabilities were categorized in the same groups classified in the Work Ability Index (Tuomi & Oja, 1998) (musculoskeletal disorders, respiratory system diseases, cardiovascular diseases, several diseases, other diseases), (vi) what are the main threats to your work ability (open-ended questions were categorized as follows: physical fitness, workload, age, keeping up to date, mental stress, working conditions, and voice control)
- Satisfaction and rewards: (i) how satisfied are you with your job, (ii) how satisfied are you with your salary, (iii) how satisfied are you with your ability to balance the needs of your job with those of your personal or family life (scale 1=very dissatisfied, to 5=very satisfied)

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- Work environment: (i) the atmosphere of the work environment is, (ii) my work conditions are, (iii) the administration of my workplace is (scale 1=very bad, 2=bad, 3=neither bad nor good, 4=good, 5=very good).

Data analysis

The data analysis began with descriptive statistics that represent the means and standard deviations for PE teachers background variables. The differences in the work ability variables between men and women and age groups were analyzed with independent sample *t*-tests and analysis of variance (ANOVA). Cohen's *d* statistic was used to report the effect size of differences. It was considered large when .80 or higher, moderate at about .50, and small when it was .20 or less.

Results

Of the 655 PE teachers in this study, 84% had a permanent job, 14% were working with a fixed contract, and 2% had a part-time job. The mean age was 44 years (*SD* 10 years) and the mean teaching hours was 23.3 hours (*SD* 6.7 hours) and 8.6 hours (*SD* 9.5 hours) for duties other than teaching. Most of the teachers (54%) taught in mid-sized schools (251–550 pupils). PE teachers identified their physical fitness ($M=4.05$, $SD=0.73$), physical health ($M=3.99$, $SD=0.76$), mental health ($M=4.13$, $SD=0.70$), and stress tolerance (3.95, 0.73) as good. Likewise, work motivation ($M=3.86$, $SD=0.85$), professional competence ($M=4.10$, $SD=0.54$), and work ability ($M=4.13$, $SD=0.64$) were good among PE teachers. Men identified their fitness ($p=.013$) and work ability ($p=.011$) as better than did women. The youngest age group (30 years or younger) identified their physical fitness as better than the oldest age group (over 50 years old). The oldest age group identified their work ability as lower than that of the middle aged ($p=.044$) and youngest age groups ($p=.026$). In contrast, the youngest age group identified their professional competence as lower than that of the

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middle aged ($p=.028$) and oldest age groups ($p=.018$). There was no difference in mean age between men (42.4) and women (43.8).

A total of 31% of the PE teachers reported that they had at least one disease or disorder that hindered their work ability. There were no statistical differences in prevalence of diseases or disorders between men and women ($\chi^2(1)=0.641, p=.42$). The most common work ability problems among PE teachers were musculoskeletal disorders (71% of respondents identified work ability problems). In addition, respiratory system diseases were common among PE teachers (11%). Six percent identified that they were suffering from several diseases or disorders. Among those who identified musculoskeletal disorders, knee (31%) and back (27%) problems were the most common. PE teachers considered issues related to physical fitness the main threat to their ability to work in the future (35% of the respondents). Other common concerns were related to workload issues (22%), mental stress issues (21%), "keeping up to date" (8%), age concerns (7%), working conditions (e.g., problems with indoor air or working in cold or wet conditions) (6%), and concerns with voice control (1%). Among the youngest age group, the most common concern was issues related to mental stress (33% of the group), while issues related to work ability were most common in other groups (38% and 34% among older age groups) (Table 1). Women (25%) identified workload issues more than men (13%) ($p=.008$), while men (33%) were more concerned about mental stress issues than women (17%) ($p=.002$).

The PE teachers were satisfied with their work ($M=3.8, SD=0.81$). The teachers were also satisfied with their personal and work life balance ($M=3.7, SD=0.92$), work conditions ($M=3.6, SD=0.92$), and atmosphere in the workplace ($M=3.6, SD=0.90$). However, PE teachers were not as satisfied with the salary ($M=3.2, SD=0.85$) and administration of the work ($M=3.4, SD=1.06$) (Table 2). There were no differences between age groups of gender. The PE teachers who identified their work ability as good or very good were more satisfied with their

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job ($p < .001$). They were also more motivated to their work and considered their professional competence better than those who did not identify their work ability as good or very good.

Discussion

The purpose of this study was to determine the work ability of Finnish PE teachers. This study provides new and updated information about PE teachers' work ability, main disorders, and the main threats to the teachers' ability to work in the future. This study included 655 PE teachers, of whom 28% were male. This is close to the overall distribution of men and women, since overall 31% of the association's members are men.

Generally, PE teachers identified their physical fitness work ability as good. The oldest teachers identified their work ability as lower than that of the youngest and middle-aged teachers. Likewise, female PE teachers identified their work ability as lower than their male counterparts did. These results are in line with previous results by Kinnunen et al. (1994). The PE teachers estimated their physical fitness was high compared to that of their age peers, but especially older female teachers' work ability was poor. Similar to previous studies (e.g., Louhevaara et al., 1990), the PE teachers in this study found that work ability was their biggest concern related to the future.

Results of this study can be viewed with the work ability house (Ilmarinen, 2006). In the first floor of the house, there is health and functional capacity. In the PE teaching profession, this is more important than in many other professions. If the health and functional capacity is wobbly, then the whole work ability house may collapse. Functional capacity seems to be the most common disorder in this study. The PE teachers in this study identified musculoskeletal disorders as the main obstacles to work ability. In Sandmark's (2000) and Louhevaara et al.'s (1990) studies, musculoskeletal disorders were also common in PE teachers. In addition to respiratory system diseases, several diseases were reported to hinder work ability. PE teachers considered issues related to physical fitness the main threat to their

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work ability. Workload issues were also highlighted in this study. These disorders and workload issues are not surprising, since the job description includes physically stressful movements and situations. PE teachers' workload could be potentially reduced with administration tasks. Likewise, since the physical education teacher education (PETE) programs in Finland include health education as a minor subject for almost all PE graduates, offering more health education for older PE teachers would decrease their physical workload. Better teaching arrangements such as schedules, smaller teaching groups, and enough time for recovery could also reduce the teachers' workload. However, since these health issues are now well-known, they should be considered more in the PETE program and in the professional development of PE teachers. Preventive exercise programs to strengthen back muscles and supporting knee joint muscles are needed. In Finland, the first rehabilitation courses especially for PE teachers were implemented in 2014. The feedback from these courses has been positive and promising. However, additional preventive strategies should be arranged in the future so the work ability of PE teachers could be guaranteed in their later work years, so the basis of the house of the PE teachers' work ability; health and functional capacity, is in order.

As Lemoyne et al. (2007) concluded, additional preventive strategies for reducing occupational risks among PE teachers should be explored. We must address concerns not only about musculoskeletal disorders and hip, knee, and shoulder problems but also hearing. PE classes will be noisy in the future, but according to Jiang (1997), the whistle generates the highest noise level. For example, use of electronic whistles could potentially decrease noise levels. Work ability was related to job satisfaction. Thus, maintaining work ability could not only maintain job satisfaction but also retain PE teachers in the profession.

Although these results are based on a study conducted in Finland, PE teachers all over the world face the same issues. Sport cultures can vary across countries, but the basic duties

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in different sports from the perspective of PE teachers are similar. PE teachers must pick up objects, carry, displace, or store heavy objects or equipment, demonstrate technical moves, travel frequently between workplaces, and provide different kinds of sports instruction.

Recently, the Finnish government decided to raise the retirement age. The retirement age has been raised to 65 and 68 in the future. In other countries, there is also pressure to raise the retirement age. It is reasonable to consider whether it is possible or even reasonable to work as a PE teacher at the age of 67. It has been shown that PE teachers suffer from different kinds of disorders. In the profession, one must move and help students with different kinds of tasks. They expose PE teachers to injuries, especially in the 60 and older age group. Whether older PE teachers' workload could be reduced with health education or teaching other subjects should be considered. Administration duties could also lessen the workload of PE teachers.

In the future, more research should be directed to explore the reasons behind PE teachers' disorders. Are these disorders related to injuries incurred during PE teaching? Could these disorders be prevented?

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TABLE 1

Most common identified issues related to future challenges for work ability among age groups and genders (%).

	PF*	WL	Age	Update	MS	WOC	VC
Total	35	22	7	8	21	6	1
<30 years	19	25	3	6	33	11	3
31–50	38	24	5	7	18	7	1
>51	34	16	13	9	24	4	0
Men	31	13	5	8	33	9	1
<30 years	23	15	0	0	54	8	0
31–50	36	13	5	9	27	9	1
>51	20	15	5	10	40	10	0
Women	37	25	7	7	17	6	1
<30 years	18	30	4	9	22	13	4
31–50	39	28	4	7	15	6	1
>51	37	17	15	9	19	3	0

Note. PF=Physical fitness, WL=Workload, MS=Mental stress, WOC=Work conditions,

VC=Voice control

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TABLE 2

Comparison of PE teachers' background variables and work ability items between men and women (t-test).

	Men		Women		P-value	Range for all
	Mean (SD)	<i>n</i>	Mean (SD)	<i>n</i>		
Age	42.5 (9.9)	185	43.9 (10.2)	469	0.104	22–63
Teaching hours	23.6	138	23.3	327	0.712	2–36
Other than teaching hours	8.6	104	8.7	250	0.977	1–50
Job satisfaction	3.9	142	3.8	329	0.081	1–5
Physical fitness	4.2	140	4.0	317	0.015	1–5
Physical health	4.0	140	4.0	317	0.677	2–5
Mental health	4.2	140	4.1	317	0.167	1–5
Stress tolerance	4.0	140	3.9	317	0.080	1–5
Work ability	4.3	140	4.1	317	0.012	1–5
Work motivation	3.8	140	3.9	317	0.741	1–5
Atmosphere	3.6	140	3.6	317	0.703	1–5
Work conditions	3.7	140	3.6	317	0.324	1–5
Expertise	4.1	140	4.1	317	0.501	2–5
Administration	3.5	140	3.4	317	0.435	1–5
Salary	3.2	140	3.2	317	0.558	1–5
Free time with family	3.7	140	3.7	317	0.908	1–5