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Effects of A Healthy Physical Activity Program on The Human Resources of a Company in Social Crisis

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Abstract

Our research focuses on the effect of a physical activity program on employees' quality of life. The originality of our study is that it operates in a degraded professional sector and is interventionist. The methodology is longitudinal in order to record the effects of implementing a physical activity program on employees, specifically selected for their age over 50 and their physical inactivity. We mobilized the concept of "Health-Related Quality of Life" to explore the links between perceived health, job satisfaction and physical activity. Two points of measurement are carried out before and after the program, using the "Health Enhancing Physical Activity" test battery and the "Short Forme Survey" and "Michigan Organisational Assiment" questionnaires. Data were processed using Sphinx software. The results of the study show a clear improvement in physical qualities, but no significant change in the participants' perceived health or satisfaction with the work they perform on a daily basis. This leads to the hypothesis that this type of program, when carried out in a deteriorated professional sector, essentially impacts employees' physical and individual feelings, rather than their psychological and social dimensions.

Keywords: Physical activity; Business; Health; Job satisfaction; Quality of life

Abbreviations: QWL: Quality of Working Life; RGPD: Regulation for the Protection of Personal Data; MOAQ: Michigan Organisational Assiment Questionnaire

Introduction

Socio-economic changes have altered the social landscape of companies (Proudfoot Consulting - 2004). The quest for productivity, necessary for economic progress, raises new questions in terms of health at work. Indeed, the demand for productivity increases certain physical and mental pathologies, leading to fatigue, reduced performance and absenteeism (Biales, 2008). The deleterious effect of certain working conditions on people's physical health (musculoskeletal disorders, excess weight linked to a sedentary lifestyle) or psychological health (stress, depression) is regularly quantified (Baromètre Santé, 2010). In companies where stress is high, the increase in certain pathologies is a source of absenteeism (Alma, 2015); [1], leads to poor social relations and increases work-related accidents [1] (Gollac & Volkoff, 2006). In response, managers are looking for solutions to improve employee health, including sport at work. While, at first glance, developing physical activities for employees would seem to be a solution for improving health and quality of life at work, our work seeks to demonstrate the limits of this type of program when developed within a socially degraded professional sector. We chose to focus on the hospital sector, which has been particularly hard hit over the past 20 years by successive reforms (new financing methods, fee-for-service pricing, the rise of contractualization, etc.). Excluding the specific period of covid, this sector generally records an average absenteeism of 10 days of sick leave per year, compared with 7.9 days for other government services, and this for all categories of personnel and all reasons combined [2].

Theoretical Framework

Our research is positioned within the general framework of health promotion through physical activity. We consider physical activity in the sense defined by the World Health Organization, as any bodily movement produced by muscles that requires the expenditure of energy, and which designates all the movements we make, notably in the context of leisure, in the workplace or to move from one place to another. For our study, we use the

concept of Quality of Working Life (QWL), which combines four aspects of working life: physical integrity, psychological integrity, development of social dialogue and work-life balance (Davis and Cherns, 1972). At the end of the twentieth century, economic constraints linked to the competitive environment became more pronounced and weighed heavily on work, leading to stress and burnout [3]. In response, companies are concerned with their employees' quality of life, in particular by encouraging them to take part in physical activities. While the stated objectives are to reduce physical and psychosocial risks at work (Alma, 2016), workplace accidents, absenteeism and turnover [1] (Coetsier et al., 1996; Gollac & Volkoff, 2006), the effects on employees' quality of life remain difficult to demonstrate.

A number of studies have shown that physical activity has a positive impact on the company, in terms of improving quality of working life, workplace relations and corporate image, as well as reducing absenteeism and staff turnover (US. Department of Health, 1999). A physically active employee is 12% more productive than a sedentary one (Health Canada, 2006). Research into health-related physical activity programs in the workplace has reported positive impacts on employee health and productivity [4-7]. In addition, it has been shown that interventions of this type can have favorable consequences on reducing sedentariness and increasing PA behaviors at work (Commissaris et al. 2016). Physiological benefits have also been reported; in particular, PA could reduce the risk of chronic disease in employees by increasing their physical capabilities (Christensen et al. 2011; Christensen et al. 2015, WHO, 2008). Some programs could even improve productivity within the company (Conn et al. 2009). The benefits for employees ultimately develop a positive dynamic for the company.

However, other studies reveal more mixed results. Actions to promote and develop physical activity programs in working environments are effective provided they are individualized and based on recognized theoretical models (Taylor & al., 2011). Other studies indicate that the effects of physical activity at work are limited on absenteeism and inconclusive on satisfaction, job stress, turnover and productivity (Prosper, 2002). While there is a positive relationship between physical activity and employees' well-being at work, there are no clear and direct relationships between physical activity and social performance [8]. Some studies find no correlation between physical activity programs, quality of life and job satisfaction [9]. Others show no significant effects between physical activity and vitality, commitment, productivity and absenteeism [10]. Generally speaking, all this research compares cohorts of employees who take part in physical activity and those who don't, at a given point in time, without any longitudinal methodology.

Tools and Methods

The research protocol is interventional and longitudinal in nature. It explores the links between the level of physical activity and the quality of life of employees through their state of health and job satisfaction. Our study involved 93 physically inactive employees over 50 years of age working in the same professional structure (a children's clinic in Nice, southern France). Physical measurements, supplemented by questionnaires, will be carried out at the beginning of January 2019 and at the end of the program in July 2019. This research complies with the Regulation for the Protection of Personal Data (RGPD). To this end, our project has obtained the approval of the Ethics Committee of the Université Côte d'Azur. Our laboratory is carrying out this research without collecting administrative data (surname, first name) from respondents, and is exploiting the responses in a purely statistical way for fundamental research purposes. Respondents are informed of the nature of the data collected, the purpose of the study, who processes it, for whom it is intended and how long their answers will be kept.

At the start and end of the program, participants undergo a series of physical tests and answer two questionnaires concerning their health and quality of life at work):

i. The test to measure participants' physical condition is based on standardized measures borrowed from the "Health Enhancing Physical Activity" methodology (Wende et al., 2003). The measures selected are a balance test (static unipodal support), a lower-limb strength measurement (seated standing test) and an endurance test (6-minute walk).

ii. Employee health was measured using the Short Forme Survey questionnaire (Ware & Gandek 1998). This 12-item questionnaire is available in French [11]. Its scoring is a weighted system of Likert scale ratings for each item. Scores are then transformed on a scale from 0 (negative to health) to 100 (favorable to health). A score is established for the physical component and a second score for the mental component, and an average score can be obtained from all the items. A score above 50 corresponds to average quality of life, between 40 and 49 to mild disability, between 30 and 39 to moderate disability, and below 30 to severe disability.

iii. Corporate social climate is measured using the Michigan Organisational Assiment Questionnaire (MOAQ) (Sepctor 1997, Lawler et al., 1975). This questionnaire was designed to provide information on the perceptions of organizational members. The questionnaire is based on a theoretical framework adapted from Hackman and Oldham [12]. It is a tool for measuring general job satisfaction, by differential measurement using three-point questioning and integrating the various dimensions of work (recognition, training, project, integration, involvement, commitment, social dialogue and communication, skills and careers, etc.). The scores obtained are expressed on a 5-point scale, with 1 indicating a poor social climate and 5 a good social climate.

For six months, employees follow a set of 20 standardized physical activity sessions adapted to sedentary, physically

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unconditioned people of all ages. The activity is adapted to the constraints of the company (partially glazed premises, presence of tables and chairs, surface area of around 30 m^2 and session limited to 40 minutes). The aim of this formal approach is to work on different physical qualities while maintaining a jovial atmosphere. The aim of the sessions is to develop physical qualities that are "useful" in everyday life (Strength, Endurance, Flexibility, Balance) by following the same routine. Data collected via questionnaires (biophysical measurements, health perception and job satisfaction) at the start and end of the program are processed using Sphinx survey and data analysis software (www.lesphinx-developpement.fr) [13-20].

Results

At the start of the study, we welcomed 114 participants. Of these, 93 attended at least one physical activity session and 11 dropped out after the second session. Of these first-time participants, 51 actually agreed to answer the survey questionnaire, and 40 of them took the physical tests at the start of the program. Processing the data collected from them reveals a number of significant differences (Table 1).

Table 1: Biophysical fitness measurements (H.E.P.A.).

	Equilibre sur une jambe		Souplesse membres inférieurs		Endurance de force (30s)		Puissance (5 répétitions)		Distance parcourue en 6 mn marche	
	Janvier	Juin	Janvier	Juin	Janvier	Juin	Janvier	Juin	Janvier	Juin
	60	60	5	3	25	30	5	3	680	690
	13	60	4	4	21	34	6	3	700	724
	33	51	3	4	17	21	-	4	637	687
	40	60	5	4	24	25	6	4	560	724
	52	41	5	6	28	30	5	3	546	731
	5	60	6	4	29	28	5	4	617	650
	60	60	4	4	23	33	5	3	698	675
	60	60	3	5	27	29	6	3	700	678
	37	60	4	4	22	30	5	4	508	750
	60	60	6	4	21	33	4	4	640	825
	9	60	5	3	17	27	4	4	568	706
	20	26	2	4	12	18	9	4	556	578
Moyenne	37,42	54,83	4,33	4,08	22,17	28,17	5,45	3,58	617,50	701,50
Moyenne	46,13		4,21		25,17		4,52		659,50	
Ecart-type	12,32		0,18		4,24		1,32		59,40	
	Amélioration		Régression		Amélioration		Régression		Amélioration	

Looking at the scores achieved by the participants, and comparing them with those given in France by the "Haute Autorité de Santé" (HAS), we can see a clear improvement in some of their physical qualities. Between the tests carried out in January 2019 and the same tests carried out in June 2019, there was a clear improvement in static balance on one leg, reaching the maximum HAS rating (54 seconds). There was a significant improvement in strength endurance during chair lifts (28 squats), and in the distance covered walking in 6 minutes (701 m), both of which reached a high score according to HAS data. However, results for flexibility (level 4/5) and power (3.6 seconds) showed little or no improvement, while remaining within the HAS high score range. These results reflect the average age of the participants (over 50), which slows progress in these specific physical qualities of strength and flexibility (Table 2).

There were no notable changes in the items relating to the perception of participants' state of health collected by the SF12 questionnaire. In detail, we note a single increase in the item concerning the ability to perform one's professional or domestic duties. All other items either stagnated or regressed slightly. The overall result shows a decline (-2 points) in the feeling of overall health. This result is the corollary of the decline in the feeling of physical health (-3 points), which is added to the decline in the feeling of mental health (-3 points). This situation indicates that the improvement in physical capacities, as attested by biophysical measurements, is not transmitted to participants' sense of health at the end of the program (Table 3).

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Table 2: Perceived health questionnaire (S.F.12).

Question	General perception of health		Limited health for physical exertion		Limited health to climb stairs		Physical state limits certain things	
Period	January	June	January	June	January	June	January	June
Score	57	58	37	38	53	47	33	34
Question	**Limiting physical condition at work or at home**		**Mental health limit things accomplished**		**Mental health limits attention**		**Physical pain limits work**	
Period	January	June	January	June	January	June	January	June
Score	26	33	33	23	29	25	32	33
Question	**Sad or depressed mental state**		**Calm and relaxed mental state**		**Feeling of energy overflow**		**Health status affects social relationships**	
Period	January	June	January	June	January	June	January	June
Score	30	24	58	48	68	61	27	29
General health score			Mental health score			Physical health score		
January	40		January	41		January		36
June	38		June	38		June		38
	-2			-3				-2

Table 3: Perceived job satisfaction (M.S.Q.).

	Satisfaction dans le travail		J'aime mon travail		Je n'aime pas mon travail	
	Janvier	Juin	Janvier	Juin	Janvier	Juin
	2	2	2	2	2	1
	2	1	2	1	1	2
	1	2	3	2	3	2
	2	2	1	2	1	2
	2	2	2	2	1	2
	1	1	1	1	1	1
	3	2	2	2	2	1
	2	2	1	2		1
	2	2	2	2	2	2
	1	2	1	1	1	1
	1	1	1	1	1	1
	1,73	1,73	1,64	1,64	1,50	1,45
Moyenne	1,73	1,64	1,48			
Moyenne	0,00		0,00		0,03	
Ecart-type						

For this item, the scores collected at the start and end of the program were generally low (average score of 1.61 / 5). There were no noticeable changes in work atmosphere before and after the physical activity program. In other words, participation in the physical activity program did not bring about any notable change in the social dynamic of this company, which operates in the deteriorated professional sector of the hospital environment. These results should be seen in the light of the demotivation of the caregivers who make up the bulk of our sample, the high absenteeism affecting them, and the turnover that has increased in recent years, all of which seem to have strongly counteracted the beneficial effects of our physical activity program in the workplace [20-30].

Discussion

The results show a clear improvement in the physical qualities of the employees, which is not reflected in their sense of health or job satisfaction. The fact that the feeling of health and job satisfaction did not show any positive evolution, leads to the hypothesis that introducing a physical activity program at work, in this type of degraded context, would essentially impact the individual physical dimension of the employees much more than

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their psychological and social dimensions.

These results should be seen in the context of current developments in the French hospital sector. Since the adoption of activity-based pricing, a logic of economic performance has emerged in healthcare activities (Safy-Godineau, 2013). Hospitals have begun to manage their resources differently, with the creation of hospital clusters, the concentration of technical facilities and cooperation between establishments. To cope with these changes, establishments have reduced their human resources, which account for over 65% of their expenditure, leading to a deterioration in social relations over the last ten years, with an increase in absenteeism and work-related accidents [2]. What's more, our program ended in the midst of the heatwave episodes that France experienced between June and July 2018. This highly degraded situation seems to have impacted, if not cancelled out, any psychological and social benefits of the physical activity program, and this despite the fact that employees' physical qualities had clearly improved [31-35].

The limitations of this study are linked to our small, non-probabilistic sample size. Sedentary and physically inactive employees aged 50 were deliberately targeted, so as to enable us to record real progress in physical capabilities. What's more, the workforce changed significantly between the start and end of the program, and we had no control group to compare with. It was impossible to find employees willing to undergo physical tests without taking advantage of the activity program set up in their organization. We found that 21 participants dropped out of the program without taking part in the final evaluation phase, significantly altering the characteristics of the sample. The data is analyzed by flat sorting and cross-tabulation, without any further statistical processing, as this work was essentially looking for differences in situation between the start and end of the program. These data can be used in a second phase of research.

The findings of this study lead us to make a number of managerial recommendations. In order to ensure that an organization in a socially degraded situation can benefit from the effects of this type of program, it is essential to build the physical activity project outside the context of peak workloads, relying heavily on the involvement of employees in the very design of the program. To launch a program of this kind, we need to bring together a group of willing employees, in the form of a focus group, representing the company's wide range of stakeholders: secretaries, carers, technical services.... The timing of this stage appears strategic if we are to succeed in engaging staff by putting them in a position to ask for help; all the more so when the professional sector is in decline [35-40].

Conclusion

It should be remembered that this type of physical activity program in the workplace is the exception rather than the rule, as it is mainly developed within large organizations. Smaller companies find it more difficult to implement this type of project. Within the organization that hosted the research program, most of the employees interviewed recognized the benefits of sport for themselves, but these benefits do not seem to be passed on to their health or to the company when the economic sector in which it operates is in decline. Indeed, the economic demands of the sector have imposed changes on employees' work. These upheavals seem to have had such a profound impact on the social life of the company that any new activity, including this type of project, is met with restraint and mistrust on the part of employees. But the opinions gathered as an aside to our questionnaire allow us to say that, depending on the size of the company and the commitment of its managers, a physical activity program, even within a degraded professional sector, provides the opportunity for encounters that contribute to easing tensions and conflicts, and improves interactions between colleagues. At the end of the day, even in degraded situations, the only bad physical activity program in the workplace is the one that doesn't exist! [40-47].

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