

**PRACTISING SPORTS AMONG DENTISTS IN BULGARIA**Peter Georgiev Bojinov<sup>1a</sup>, Krassimira Borissova Yaneva-Ribagina<sup>1b\*</sup>, Yulian Emilov Borisov<sup>2c</sup><sup>1</sup>Department of Dental Public Health, Faculty of Dental Medicine, Medical University - Sofia, Sofia, Bulgaria<sup>2</sup>DSK Bank PLC, Sofia, Bulgaria<sup>a</sup>PhD, Assistant Professor<sup>b</sup>PhD, Professor, Head of Department, Vice-Dean of Academic Affairs<sup>c</sup>Sociologist, Market Research AnalystReceived: May 04, 2016  
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**Cite this article:**Bojinov PG, Yaneva-Ribagina KB, Borisov YE. Sport activity among dentists in Bulgaria. *Stoma Edu J.* 2017;4(2):140-145.**ABSTRACT**

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**Introduction:** Musculoskeletal disorders (MSD) are one of the main occupational risk factors for dentists. They are associated with factors such as gender, age, length of service, lifestyle, working ergonomic conditions, sport activity etc.**The aim** of this study is to determine the spread of practicing sports among dentists in Bulgaria and the impact of some factors (gender, length of service, weekly and daily workload, and health self-assessment) on it.**Methodology:** The study was conducted by an anonymous survey of 1300 dentists in Bulgaria. The response rate of the survey was 53.84% - 700 questionnaire forms were returned back. The results are processed using statistical analyses - descriptive, graphical, alternative and  $\chi^2$ .**Results:** The results of our study reveal that a tiny fraction of dentists practiced some sport regularly (12,63%), the most active being those having 11-20 years length of service, while males are a bit more active than females. Practicing sports increases with the increase of the weekly and daily workload and drops with the decrease in own health self-assessment. With the increase of pain, caused by Work Related Musculoskeletal Disorders (WRMSD), practicing sports goes down, the most active remaining those presenting the most recent episodes of pain (for weeks) - 85.7% and moderate intensity.**Conclusion:** A very small number of dentists practice sports regularly (12.63%). The most active is the group of 11-20 years length of service, men being a bit more active than women. Practicing sports drops down with the decrease in health self-assessment. Practicing sports decreases with the pain intensity increase, the most active being those presenting the most recent episodes of pain (for weeks) - 85.7% and moderate intensity.**Keywords:** musculoskeletal disorders (MSD), sport activity, health self-assessment, daily and weekly workload.**1. Introduction**

The importance of practising sports for the general health of each individual is beyond doubt. Even back in the ancient world Aristotle noted „Nothing exhausts and destroys the human body more than continued physical inactivity“. The continued state of good general health is a guarantee and prerequisite for a long professional career.

Data from the study of M.D. DeCarvalho et al. among Brazilian dental students showed that 52% practised sports regularly - bodybuilding (20.3%) and walking/jogging/running (16.7%).<sup>1</sup>

Pursuant to a study conducted in Nepal by B.P Shrestha et al. about prevalence of WRMSD among dentists, only 16.7% asked for medical care, while 36,8% self-treated themselves with medicines, while 30.9% had regular physical exercises as back pain prevention.<sup>2</sup>

Another study by S. Sunnel et al. from British Columbia reported that 88% of dental hygienists and 61% of the dentists tested different therapies and approaches for relieving the WRMSD symptoms. The strategies, providing for continued relief were: physical exercises (13%); changing their work habits/postures (6%); fewer work days (6%).<sup>3</sup>

A study by Basset dating back to 1983 among 465 Canadian dentists established that 50% exercised as prevention of WRMSD and felt its effects.<sup>4</sup>

A study conducted in Poland by J. Szymanska in 2002 revealed that 64.6% of the dentists undertook some treatment because of MSD. The most popular methods were: physical exercises for the back - 41.55%; morning stretch exercising - 39.27%; flexor-extensor exercises for the backbone - 36.99%; swimming - 35.62%; abdominal muscles

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exercises - 35.16%; shoulder area exercises - 31.05%; relaxing practices - 17.81%; jogging - 10.05%; fitness - 7.76%.<sup>5</sup>

A study conducted in Yemen among dentists with musculoskeletal disorders identified that only 16.7% asked for medical care. As to the physical exercises in case of back pains 30.9% reported that they practice regularly, 51.5% didn't have any exercising, while 17.6% did not give an answer.<sup>6</sup>

The study by P. Dajpratham found out that key methods of pain management were traditional massages (51.9%), drug therapy (28.5%), physiotherapy (15.8%), acupuncture (7.6%) and alternative medicine (4.4%).<sup>7</sup>

The cross-sectional study among 1808 healthcare workers in Belo Horizonte, Minas Gerais State, Brazil showed the high prevalence of WRMSD (49.9%) and their association with many factors, including practising sports less than twice a week.<sup>8</sup> A questionnaire survey about musculoskeletal discomfort, completed by 329 employees in the Public Dental Services of Hordaland proved that practising sports was negatively associated with discomfort in the lower back.<sup>9</sup>

**The aim** of this study is to establish the spread of practicing sports among dentists in Bulgaria and the impact of some factors, such as gender, length of service, weekly and daily workload, health self-assessment on it.

## 2. Methodology

### 2.1. Study objectives include:

1. Outlining the spread of practicing sports among dentists in Bulgaria.
2. Determining the dependence of practicing sports on some socio-demographic factors (age and gender) and factors, characterizing the dentists' activity (weekly, daily workload), intensity of MSD pain as well as health self-assessment.

### 2.2. Study material and methods

The information needed for the purposes of the study was gathered by distributing and collecting filled in questionnaires between October 2012-April 2013. We developed the survey questionnaire specifically for this study. The survey was conducted with the support of the Bulgarian Dental Association (BDA) and the regional bodies in Sofia, Pleven, Shumen, Varna, and Vratza. A total of 1300 questionnaires were prepared and disseminated, out of which we got back 700 (return rate - 53.84%). They comprised 27 close questions (fixed answers) on paper, each having a unique entry code.

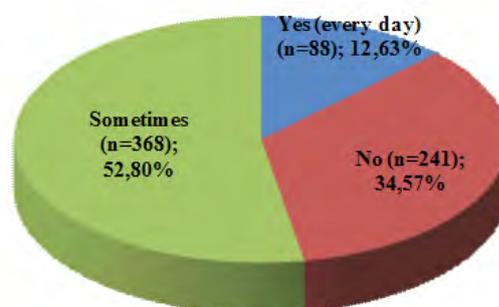
The age groups covered by the study are almost equally represented, except for the 66+ age group: 25-35 age group - 163 participants (23.35%), 36-45 - 171 individuals (24.50%), the 46-55 age group is the most numerous - 196 individuals (28.08%), 56-65 age group - 139 (19.91%), and the least represented age group of 66+ - only 29 (4.15%) i.e. all age groups were included. The relative share of dentists having +20-years length of service is distinctly high (54.33%). It suggests more representative data on the impact of dental-

specific factors, causing MSD. The major share of dentists, participating in the study, is as follows: general practitioners (58.03%), followed by the group, practicing mostly conservative dentistry (12.49%) and prosthetic dentistry (10.29%). Comparatively lower is the share of those practicing specific narrow specialties such as: oral surgery (7.40%), pediatric dentistry (6.47%), periodontology (3.12%) and the smallest share is that of orthodontics (2.20%).

## 3. Results

### 3.1. Dependency between gender, length of service and practicing sports

Just a small fraction of 12.63% (88 individuals) responded to exercise regularly. The bulk group exercises occasionally (not regularly) - 52.80% (368), while another large group does not exercise at all - 34.57% (Fig. 1).



**Figure 1.** Practicing sports among dentists.

We explored the relationship between gender and practicing sports (Fig.2).

Most of the respondents reported to go practising, but not on daily basis.

Generally practicing sports among males is higher compared to females. 14.69% of the male respondents exercised every day, while 57.96% - occasionally.

11.46% of all female respondents practiced on a daily basis, and 50.34% - occasionally.



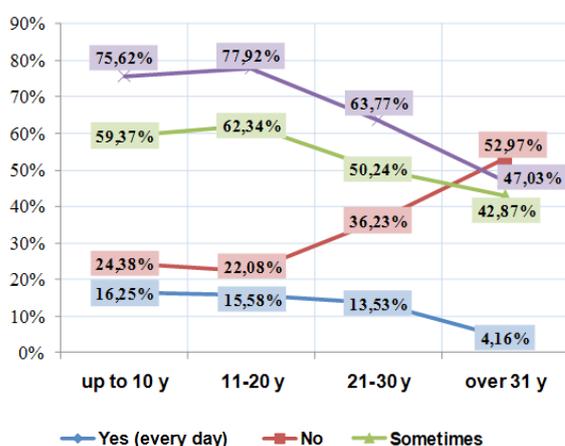
**Figure 2.** Gender relevant practicing sports breakdown.

The results indicate statistically significant dependency between practicing sports and gender. We also focused on length of service impact on practicing sports (Table 1).

**Table 1.** Dependency between length of service and practicing sports among dentists. N=689  $p < 0,05$

Dentists' practicing sports	Length of service			
	Up to 10 years	11-20 years	21-30 years	over 31 years
	n %	n %	n %	n %
yes (on daily basis)	26 (16,25%)	24 (15,58%)	28 (13,53%)	7(4,16%)
No	39 (24,38%)	34 (22,08%)	75 (36,23%)	89(52,97%)
Occasionally	95 (59,37%)	96 (62,34%)	104 (50,24%)	72(42,87%)
Total	160(100,0%)	154 (100,0%)	207 (100,0%)	168 (100,0%)

The results indicate a statistically significant dependency between length of service and practicing sports by the respondents. With the increase of length of service the relative share of those actively exercising drops. The highest level of practicing sports is reported among the age group 36-45 having 11-20 years length of service (77.92%) (Fig. 3).



**Figure 3.** Practicing sports trend based on length of service

**3.2. Dependency between weekly, daily workload and practicing sports**

We also focused on the dentists weekly and daily workload related to practicing sports (Tables 2, 3). Among the respondents having up to a 3-day weekly workload practicing sports goes up to 54.84%, while for those with a 5-day workload the figure is 65.16%, while for those with a +5-day weekly workload group this figure is 68.42%. In all the three groups of daily and hourly workload practicing sports exceeds 50%. In case of a daily workload of less than 4 hours this activity is 55.74%, 4-8 hours of workload reports 66.35%, while this figure for those having over 8 hours of workload the figure goes to 66.70%.

The results indicate a lack of a statistically significant dependency between weekly and daily workload and practicing sports by the dentists.

**3.3. Dependency between health self-assessment and practicing sports**

The relationship between health self-assessment and practicing sports is also of interest (Table 4, Fig. 4). In case of poorer health self-assessment practicing sports decreases. 78.44%

**Table 2.** Dependency between the dentists weekly workload (in workdays) and practicing sports. N=695  $p > 0,05$

Dentists' practicing sports	Dentists weekly workload (in days)		
	Up to 3	Up to 5	Over 5
	n %	n %	n %
yes (on daily basis)	4 (12,90%)	56 (10,55%)	28(21,05%)
No	14 (45,16%)	185 (34,84%)	42(31,58%)
Occasionally	13 (41,94%)	290 (54,61%)	63(47,37%)
Total	31 (100,0%)	531 (100,0%)	133 (100,0%)

**Table 3.** Dependency between the dentists daily workload (in hours) and practicing sports. N=695  $p > 0,05$

Dentists' practicing sports	Dentists' daily workload (hours)		
	Less than 4	4-8	over 8
	n %	n %	n %
yes (on daily basis)	7(11,48%)	66(12,55%)	14(13,0%)
No	27(44,26%)	177(33,65%)	36(33,3%)
Occasionally	27(44,26%)	283(53,80%)	58(53,7%)
Total	61(100,0%)	526(100,0%)	108(100,0%)

of respondents, self-assessing their health as “excellent” practice sports regularly and occasionally, as 54.03% of these self-assessing their health as “satisfactory” practice sports. 66.8% of respondents, self-assessing their health as “very good” and “good” practice sports. This makes us assume that practicing sports by the dentists depends on their good health self-assessment. The results indicate a statistically significant dependency between health self-assessment and practicing sports by the dentists.

**3.4. Dependency between practicing sports and muscle-skeletal pain**

We also explored the association between practicing sports and the presence of MSD-pain (Table 5.) The largest groups, having provided answers to both questions, covers 310 respondents (from a total of 692), who experience pain due to MSD but also practice sports “occasionally”.

The data in Table 5 reveal that out of about 2/3 (567) of the surveyed dentists, reporting the presence of MSD provoked pain, 11.29% practice sports on daily basis, and 54.67% - occasionally (a total of 65.96%).

It gives us grounds to assume that the presence of pain motivates dentists to engage in practicing sports.

The results indicate a lack of a statistically significant dependency between the presence of MSD type pain and practicing sports by the dentists.

To support this statement we focused on the dependency between practicing sports and the pain intensity self-assessment (Table 6). Our data reveal that those who most actively practice some sport are those experiencing moderate (64.06%) and mild pain intensity (34.37%). In the group exercising “occasionally” once again the most active are those experiencing moderate (69.25%)

**Table 4.** Dependency between health self-assessment and practicing sports by dentists. N=693 p<0,05

Dentists' practicing sports	Health status self-assessment				
	Excellent	Very good	Good	Satisfactory	Poor
	n %	n %	n %	n %	n %
yes (on daily basis)	16 (31,38%)	47 (21,08%)	17 (6,00%)	5 (4,03%)	0(0,0%)
No	11 (21,56%)	55 (24,67%)	113 (39,93%)	57 (45,97%)	5(41,67%)
Occasionally	24 (47,06%)	121 (54,25%)	153 (54,07%)	62 (50,00%)	7(58,33%)
Total	51(100,0%)	223 (100,0%)	283 (100,0%)	124 (100,0%)	12 (100,0%)



**Figure 4.** Trends in practicing sports referenced to dentistv health self-assessment

**Table 5.** Dependency between practicing sports and the presence of MSD type of pain. N=692 p>0,05

Dentists' practicing sports	Presence of MSD type of pain	
	Yes	No
	n %	n %
yes (on daily basis)	64 (11,29%)	22 (17,60%)
No	193 (34,04%)	46 (36,80%)
Occasionally	310 (54,67%)	57 (45,60%)
Total	567 (100,0%)	125 (100,0%)

**Table 6.** Dependency between practicing sports and the dentists' pain intensity self-assessment. N=567

Dentists' practicing sports \ Pain Intensity	Mild	Moderate	Severe	Unbearable	Total
	n %	n %	n %	n %	n %
Yes (on daily basis)	22 (34,37%)	41 (64,06%)	3 (4,69%)	1 (1,56%)	64(100%)
No	35 (18,04%)	133 (68,56%)	33 (17,01%)	3 (1,55%)	194(100%)
Occasionally	73 (23,62%)	214 (69,25%)	37 (11,97%)	1 (0,32%)	309(100%)

**Note:** Sum total of all percentages may exceed 100, as some of the respondents have marked more than one response; the total number is based of the number of respondents.

**Table 7.** Dependency between the dentists' practicing sports and the duration of MSD provoked pain. N=562  $p>0,05$ 

Dentists' practicing sports \ Pain Intensity	Mild	Moderate	Severe	Unbearable	Total
	n %	n %	n %	n %	n %
Yes (on daily basis)	22 (34,37%)	41 (64,06%)	3 (4,69%)	1 (1,56%)	64(100%)
No	35 (18,04%)	133 (68,56%)	33 (17,01%)	3 (1,55%)	194(100%)
Occasionally	73 (23,62%)	214 (69,25%)	37 (11,97%)	1 (0,32%)	309(100%)

and mild pain (23.62%).

Gradually, with the increase of the pain intensity practicing sports is reduced, which means that probably strong pain is a barrier to sporting or namely due to reduced sports practicing the pains intensify.

Our data show no statistically significant dependence between practicing sports and the pain duration period (Table 7).

What is interesting in our findings is that the most active dentists prove to be those experiencing more recent pain (for weeks - 85,72%). Practicing sports is lower in the groups experiencing the MSD type of pain for months and years (respectively 68.25% and 63.07%). It indicates that despite the lack of statistical significance, it is likely that continued chronic pain is a hindrance to practicing sports by the dentists.

#### 4. Discussion

Our study revealed that a small percentage of dentists practiced sports regularly (12.6%). The more active were the younger dentists (length of service group 11–20 years), men being more active than women. Practicing sports dropped with the decrease in health self-assessment. Officially published data are similar to our findings. The study by J. Szymanska<sup>5</sup> conducted in Poland also indicated a low level of practicing sports- fitness 7.76% and jogging - 10.05%. A significantly higher level of practicing sports was observed however among the dental medicine students in Brazil per data reported by M. DeCarvalho<sup>1</sup>, showing that

50.2% practiced sports regularly (20.3% body building and 16.7% jogging). Our data also show more active practicing of sports among younger dentists - with 11-20 years of length of service. We think that pain due to MSD serves as a motivation to go sporting, yet with the pain intensity increase practicing sports is reduced, most active being those experiencing recent pain (for weeks - 85.72%). Practicing sports influenced positively the health of dentists, decreasing the pain of the lower back.<sup>9</sup> Physical activities less than twice a week were associated with the higher prevalence of MSD.<sup>8</sup>

#### 5. Conclusions

1. A very small fraction of the respondent dentists practice sports regularly (12.63%).
2. The most active is the group of 11-20 years length of service, men being a bit more active than women.
3. Practicing sports drops down with the decrease in health self-assessment.
4. Despite the lack of statistical significance, the results showed that practicing sports decreased with the pain intensity increase, the most active being those with most recent pain (for weeks) - 85.7% and moderate intensity.

#### Acknowledgments

The authors declare no conflict of interest related to this study. There are no conflicts of interest and no financial interests to be disclosed.

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## CV

Dr Peter Georgiev Bojinov was born on June 20, 1976 in Sofia. He graduated from the Faculty of Dental Medicine, Medical University - Sofia, Bulgaria in 2000.

In 2002 he became an Assistant at the Department of "Social Medicine and Dental Public Health" in the Sofia Faculty of Dental Medicine. In 2005 he obtained a new specialty, namely "Social Medicine and organization of dental health", and in 2007, another specialty, namely "General Dentistry". In 2011 he was promoted Assistant Professor.

In 2014 he defended his doctoral thesis on the topic: "Musculoskeletal disorders among dentists, associated with dental practice" and was awarded his PhD degree.

## Questions

### Work related musculoskeletal disorders among dentists are associated with:

- a. Microorganisms in the mouth of patients;
- b. Sport activity of dentist;
- c. Mercury, monomers of dental plastics and other chemical risk factors of dental practice;
- d. Marital status of dentists.

### Underlain the correct answer:

- a. Men are more active than women with sport activities;
- b. Older dentists are more active with sport activities than younger;
- c. There is no statistical significance between sport activity and length of service;
- d. There is statistical dependency between sport activity and daily and weekly workload.

### In our study the regular sport activity among dentists is:

- a. 100%;
- b. 12.6%;
- c. 77.9%;
- d. 50%.

### The sport activity increases with:

- a. Increase of pain intensity;
- b. Age;
- c. Decrease of pain intensity;
- d. Decrease of health self-assessment.