Influence of Reported Physical Activity Level and Psychosocial Features on Orofacial Mechanical Sensitivity: A Pilot Study

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Aims: To evaluate the influence of self-reported physical activity level on painful mechanical somatosensory profile and psychosocial characteristics. **Methods:** A total of 90 participants, male and female, were divided into three groups based on the frequency, duration, and intensity of physical activity over the last 3 months. The classification followed a modified criterion of the short version of the International Physical Activity Questionnaire (IPAQ). Mechanical quantitative sensory tests were performed in the region of the anterior temporalis muscle and on the thenar area of the dominant hand, and psychosocial aspects were assessed using questionnaires measuring state and trait anxiety, pain catastrophizing, lifestyle, and quality of life. **Results:** There was no significant main effect of group on any of the somatosensory variables (F < 0.34 and *P* > .416). As for psychosocial aspects, the low level of physical activity group had the lowest scores on the lifestyle questionnaire (*P* < .009). **Conclusion:** Level of physical activity did not significantly influence mechanical somatosensory thresholds or temporal summation in the orofacial region, and worse quality of life was found in participants reporting a low level of physical activity. *J Oral Facial Pain Headache 2020;34:303–310. doi: 10.11607/ofph.2559*

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Physical activity has often been indicated for treatment of patients with chronic pain due to its beneficial effects on pain perception.[1] Regular physical exercise also has effects on improving general health, which may be relevant for the treatment of patients with chronic pain.[2] Studies performed in patients with chronic pain conditions such as tension-type headache, fibromyalgia, and chronic TMD show an improvement in frequency of pain after training with aerobic exercises, resistance exercises, relaxation, and physiotherapeutic programs.[3–6] Moreover, exercise provides proven neoplastic and neogenesis processes, with improvement of mood and cognition, among other benefits.[7]

The prescription of physical exercise as part of chronic pain control therapies is not a uniform method and usually includes variations in the content and dose of the prescription.[3,4,8] More studies in athletes offer the opportunity to evaluate the somatic and psychologic effects of regular physical activity on pain perception, which could promote the development of effective types of exercise for relieving painful symptoms in patients.[9] Therefore, a broader understanding of the impact of exercise on pain perception and processing would help to treat patients with general pain.[10] Overall, research involving physical activity and pain has focused on exercise-induced hypoalgesia, which occurs more consistently during and after physical activities.[11–13] The effects of physical activity on the endogenous inhibitory modulating system have also been reported.[14,15] Exercise appears to exert an inhibitory effect on pain via various mechanisms; eg, increased release of endogenous opioids; changes in primary excitatory and inhibitory central nervous system (CNS) neurotransmitters, such as glutamate and gamma-Aminobutyric acid (GABA), cannabinoids, and stress hormones; and preservation of brain structures important for the functioning of this pain modulation system.[10] To the present authors' knowledge, however, not much has been clarified about the actual effect of regular physical activity of different levels of intensity on the somatosensory profile in the orofacial region. Furthermore, psychosocial and behavioral aspects have also been described as able to interfere with pain perception, but the impacts of each factor and of their combinations with activity levels are not fully known.[16] To evaluate the presence of changes in the somatosensory profile, quantitative sensory testing (QST) is an appropriate tool that constitutes a sequence of noninvasive and reliable psychophysical tests that systematically evaluate the function of myelinated and unmyelinated fibers by applying thermal and mechanical stimuli in different qualities and intensities to quantitatively determine gain and loss of sensory function.[17]

Thus, the present study aimed to contribute to a better understanding of how the frequency, duration, and intensity of self-reported physical activity influence mechanical pain sensitivity in the orofacial region and the psychosocial characteristics of healthy subjects.

Materials and Methods

Sample and Design

The present study was approved by the Institutional Review Board of Bauru School of Dentistry, University of São Paulo, Bauru, Brazil. All participants were informed of the research and signed a free informed consent form. The population was selected from the local community of the Bauru School of Dentistry and from individuals participating in physical activity in the city of Bauru. Recruitment was via advertisement at the school and locations offering physical training (eg, gyms, fitness centers). A total of 90 adult participants aged 18 to 40 years were selected based on the fact that the pain inhibitory mechanism seems to be impaired with age.[18] To participate, individuals could not have any musculoskeletal, neurologic, cardiovascular, or respiratory conditions and needed to be in good general health and able to undergo the proposed tests. The exclusion criteria included acute or chronic pain, such as odontogenic pain, TMD, primary headaches, cervical dysfunction, fibromyalgia, or neuropathic pain; use of analgesics on a regular basis or within 24 hours prior to the examination; use of antidepressants, membrane stabilizers, benzodiazepines, or any other central action medication; use of narcotics or frequent smoking; high blood pressure; and any psychiatric conditions that could interfere with the participant's communication.

Following application of the eligibility criteria, the participants were further categorized into three groups according to self-report of physical activity. This assessment was based on the short form of the International Physical Activity Questionnaire (IPAQ). The IPAQ is a self-report questionnaire that estimates physical activity, and the items are structured to provide information on frequency (days/week), duration (hours and minutes/day), and intensity (low-, moderate-, and vigorous-intensity activities). The instructions are standardized and clearly indicate the meaning of low, moderate, and vigorous intensity. The IPAQ was originally published in 1998, and both versions (the complete and short forms) have been translated to and validated in many languages, including Brazilian Portuguese.[19] Therefore, three groups were established based on the IPAQ criteria according to level of activity in the last 3 months: *(1)* low-level activity group (less than 30 minutes of physical activity per day less than 2 days per week, except for walking at a normal speed) (G1); *(2)* moderate-level activity group (at least 30 minutes of physical activity per day between 2 and 3 days per week; participants who reported only walking were not categorized in this group) (G2); and *(3)* high-level activity group (at least 30 minutes of physical activity per day 5 or more days per week; participants who reported only walking were not categorized in this group) (G3).

Clinical Outcome Variables

Two groups of variables were analyzed in all participants: psychosocial variables and QST results, which were collected in a single session and applied on the anterior temporal muscle and region of the thenar muscle on the dominant side. Individuals who practice physical activities may experimentally present somatosensory changes of hyperalgesia, hypoalgesia, and pain exacerbation due to thermal and mechanical factors. QST encompasses a battery of tools that may be used to evaluate changes in somatosensory profile.[17] Based on previously published studies,[12,17,20] QST includes a thorough list of validated tests representing measurements of all relevant subtypes of the somatosensory system, including: threshold for detection of cold and heat; number of paradoxical heat sensations during thermal sensory threshold testing; mechanical pain threshold (MPT) and mechanical sensitivity to pain; dynamic mechanical allodynia; and temporal summation of pain. A standardized QST protocol was established as suggested by the German Research Network on Neuropathic Pain (DFNS).[17] In the present study, QST procedures were performed by two examiners (L.A.M., L.S.F.) trained by one chief instructor (Y.M.C.) in a 1-day training session.

The somatosensory tests selected for the study comprised a sequence of three subtests (MPT, wind-up ratio [WUR], and pressure pain threshold [PPT]) performed according to the sequence suggested by the DFNS and randomized for the sequence of sites evaluated (anterior temporalis and thenar area). During QST, the participants were comfortably seated in a chair with a horizontal backrest in a silent room at an ambient temperature (25°C). Because of locomotion difficulties, some participants were evaluated in gym studios at rest, at least 30 minutes before onset of activity. The washout period and the sequence of tests followed the DFNS recommendations.

Mechanical pain threshold. The MPT test consists of the use of monofilaments adapted by Semmes-Weinstein to determine the pain threshold. The kit employed contains 20 nylon monofilaments of different diameters calibrated to apply specific forces that are increased with the increase in monofilament diameter. The force applied by the monofilament may range from 0.008 g/mm^2 to 300 g/mm^2. Each monofilament was applied perpendicularly to the anterior region of the temporal muscle and at the center of the thenar muscle, and a light pressure was applied until the filament was bent. The participant was asked to verbally report when feeling a pain like a "needle, pin, or prick" at the area of contact of the monofilaments. The tests were initiated using the 0.008 g/mm^2 filament, and sequentially thicker filaments were applied until the participant verbally reported pain as instructed at the onset of testing. The stimuli were applied at a rate of 2 seconds on, 2 seconds off, in increasing order until the first perception was reached. This was considered a positive stimulus (+). After this positive report, the sequence was inverted, and thinner filaments were used until the participant did not report the sensation of pain anymore. This was considered the negative stimulus (–). This measurement was performed until achievement of five negative stimuli (descendent) and five positive stimuli (ascendant), and the geometric means of these repetitions were calculated.[17,20]

Wind-up ratio. The WUR test is aimed to evaluate the temporal summation of pain, understood as an increase in the nervous excitability of the nervous system, which depends on the frequency of the applied stimuli. Von Frey monofilaments that applied a force the participant perceived as "slightly painful" were chosen to assess the WUR. The perceived pain intensity of a single pinprick stimulus was assessed, as well as of a sequence of 10 pinprick stimuli (applied within an area of 1 cm^2 and application rate of 1 Hz). The participant was requested to score the pain intensity representing the single stimulus and the mean of the 10 stimuli using a 0–10 numeric rating scale. The mean value of the three series, divided by the mean rating of the three single stimuli, was used to determine the WUR.[17,20]

Pressure pain threshold. Measurements of PPT were performed using a digital dynamometer (Kratos) with a flat circular tip of 1 cm^2, through which a constant and increasing pressure of approximately 0.5 kg/cm^2/second was applied over the anterior and temporal areas of the dominant side. Three measurements were performed at each region, and the arithmetic mean of the measurements was considered the PPT value. Before the test, participants were instructed to push a button attached to the device to indicate the moment when the pressure sensation became painful.[17,20]

Psychosocial Variables

The Trait-State Anxiety Inventory (TSAI) evaluates state and trait anxiety in separate constructs, each consisting of 20 items. At the time of application, the participant was informed that the instrument was divided into two parts (TSAI-State, which is how the individual felt at the moment of the test application; and TSAI-Trait, which is how the patient normally feels every day). Responses for the TSAI-State assess the intensity of current feelings as: not at all; somewhat; moderately so; and very much so. Responses for the TSAI-Trait assess the frequency of feelings in general as: almost never; sometimes; often; and almost always. Scores range from 20 to 80, with higher scores correlating with greater anxiety. This instrument was developed by Spielberger[21] and translated and validated into Portuguese by Biaggio and Natalício.[22]

The Pain Catastrophizing Scale (PCS) evaluates the degree of pain catastrophizing. This questionnaire is self-administered and composed of 13 items, in which the patient must report the degree to which they present any thought or feeling described on a 5-point scale (0 to 4), resulting in a total possible score of 52. The higher the score, the more catastrophizing thoughts are present. Participants were asked to answer the questions according to the thoughts and feelings they developed when they were affected by pain, regardless of whether the participant was currently pain-free. This instrument was developed by Sullivan et al[23] and translated and validated into Portuguese by Sehn et al.[24]

The Short-Form Health Survey (SF-36) questionnaire is self-administered and consists of 36 items grouped into 8 dimensions of health: functional capacity; limitations caused by physical problems and limitations due to emotional disturbances; socialization; body pain; general health state; mental health; and vitality.[25] For each dimension, the SF-36 items are coded, grouped, and transformed into a scale from 0 (indicating poorer health) to 100 (indicating better health). The higher the score, the better the quality of life (QoL) of the individual. This instrument was translated and validated into Portuguese by Ciconelli et al.[26]

The Fantastic Lifestyle Questionnaire (FLQ) is also self-administered and generically measures the respon-

Table 1 Mean (SD) Values for Age and Physical Activity for Each Group

Outcomes	G1	G2	G3
Male			
Age, y	25.5 (4.6)	27.6 (5.7)	28.2 (3.7)
Total min/wk	0 (0)	199 (74)	334 (88)
Female			
Age, y	24.5 (3.1)	26.8 (2.7)	27.6 (4.5)
Total min/wk	0 (0)	180 (74)	348 (127)
All			
Age, y	25 (3.9)	27.2 (4.4)	27.9 (4.1)
Total min/wk	0 (0)	189 (72)	341 (107)

G1 = low level of physical activity; G2 = moderate level of physical activity; G3 = high level of physical activity.

dent's lifestyle in the last month. It is a 25-item instrument assessing 11 lifestyle domains using the acronym FANTASTIC (family, friends, activity, nutrition, toxins, alcohol, stress, sleep, personality type, insight, and career). Each item is scored on a 3-point Likert scale as 0 (hardly ever), 1 (some of the time), or 2 (almost always). The sum of the item scores yields a total score that categorizes participants into four categories, where a higher score indicates more control over one's lifestyle: 0–29 (low); 30–34 (fair); 35–41 (good); and 42–50 (in control). This instrument was developed by Wilson and Ciliska[27] and translated and validated into Brazilian Portuguese by Rodriguez Añez et al.[28]

Statistical Analyses

Somatosensory and psychosocial variables are reported, respectively, as mean (SD) and median (interquartile range [IQR]). Kolmogorov-Smirnov test was applied to evaluate normal distribution ($P < .05$), and $\log_{10}$ transformations were applied for the somatosensory outcomes when the results were significant considering an alpha level of 5% ($P < .05$) and according to the DFNS guidelines. The variables anxiety level, QoL, and lifestyle did not a present normal distribution ($P < .05$), so nonparametric analysis was applied. On the other hand, the degree of pain catastrophizing presented normal distribution ($P > .050$).

Analysis of variance (ANOVA) was applied to compare somatosensory outcomes for the within-subject factor test site (2 levels) and three between-subject factors—sex (2 levels), level of physical activity (3 levels), and lifestyle (2 levels, categorized according to the median of the total sample). Tukey post hoc test was applied when the main effects or interactions were significant at a level of 5% ($P = .05$). In addition, ANOVA for the between-subject factor level of physical activity (3 levels) was applied to evaluate pain catastrophizing, and Kruskal-Wallis H test was applied to compare levels of anxiety, lifestyle, and QoL. Tukey (ANOVA) or Bonferroni (Kruskal-Wallis H) post hoc test was applied when the main effects or interactions were significant, considering a significance level of 5% ($P = .05$).

Results

Ninety participants were recruited and equally divided into three groups according to the self-reported level of physical activity: low level (G1), moderate level (G2), and high level (G3). The mean (SD) age in each of the groups was, respectively, 25.0 (3.9), 27.2 (4.4), and 27.9 (4.1) years. Although participants in G3 were older than in G1 ($P = .020$), all participants were young adults. The sex distribution was similar in all groups ($P > .05$) (Table 1).

Tables 2 and 3 describe the somatosensory and psychosocial variables within each group. Some psychosocial aspects differed significantly between groups, and G1 had the lowest scores for the FLQ ($P = .001$). Moreover, the following domains of QoL evaluation were also the lowest for G1: functional capacity ($P < .001$) and general health status ($P = .01$). Furthermore, the scores related to mental health in G1 were smaller only in comparison to G2 ($P = .02$). Although the vitality domain had an overall significant effect ($P = .03$), the multiple comparisons post hoc assessment did not show pairwise differences between any of the groups ($P > .05$). There were no significant differences among groups for TSAI trait or state anxiety, or when catastrophizing (PCS) was considered ($P > .05$).

Table 4 presents a full description of the ANOVA main effects and interactions for the somatosensory outcomes. There was no significant main effect of group (ie, activity level) on any QST variable ($P < .05$). There was a significant main effect of site for PPT, where the thresholds of the thenar region were higher than in the anterior temporalis (Tukey: $P < .001$). Finally, although there was a significant interaction among region, sex, and QoL for WUR values ($F = 6.08$ and $P = .01$), the multiple comparisons post hoc assessment was not significant (Tukey: $P > .050$).

Discussion

This cross-sectional study primarily aimed to evaluate the impact of self-reported physical activity level on the mechanical somatosensory profile of the orofacial region. The main findings can be summarized as follows: *(1)* physical activity level did not significantly influence orofacial mechanical somatosensory sensitivity; and *(2)* subjects who performed a low level of physical activity presented low QoL, as measured by the FLQ questionnaire and the functional capacity and general health domains of the SF-36.

Table 2 Mean Values for Mechanical Pain Sensitivity in Each Group

	G1		G2		G3	
	Mean (SD)	95% CI	Mean (SD)	95% CI	Mean (SD)	95% CI
MPT						
AT (g/mm^2)	83.9 (109.2)	43.1–124.7	62.5 (86.8)	30.0–94.9	58.2 (78.2)	29.0–87.4
T (g/mm^2)	94.8 (135.8)	44.1–145.6	73.1 (94.6)	37.7–108.4	71.1 (87.8)	38.3–103.9
WUR						
AT (NRS)	1.7 (0.9)	1.4–2.1	2.0 (1.31)	1.5–2.5	1.7 (0.5)	1.5–1.9
T (NRS)	1.7 (0.7)	1.5–2.0	1.8 (0.8)	1.5–2.2	2.1 (1.1)	1.7–2.5
PPT						
AT (kgf/cm^2)	1.6 (0.6)	1.4–1.9	1.8 (0.6)	1.6–2.1	1.9 (0.7)	1.7–2.2
T (kgf/cm^2)	2.9 (1.1)	2.5–3.3	3.0 (0.9)	2.7–3.3	3.2 (0.9)	2.8–3.6

G1 = low level of physical activity; G2 = moderate level of physical activity; G3 = high level of physical activity; MPT = mechanical pain threshold; WUR = wind-up ratio, PPT = pressure pain threshold; NRS = numeric pain scale (0–10); AT = anterior temporalis; T = thenar region.

Table 3 Descriptive Results for Psychosocial Variables Within Each Group

	G1	G2	G3	*P*
STAI				
Trait	35 (32–46)	34 (28–38)	35 (31–41)	.31
State	30 (25–37)	32 (28–36)	32 (29–40)	.48
PSC, mean (SD)	18.9 (12.3)	14.0 (9.1)	15.2 (10.1)	.18
FLQ	71 (67–74)	76.5 (72–83)	78 (72–83)	.001*
SF-36				
Functional	85 (90–95)	95 (95–100)	100 (95–100)	< .001*
Limitation	87.5 (50–100)	100 (75–100)	100 (75–100)	.36
Pain	74 (72–84)	74 (72–84)	72 (61–84)	.10
Health	63.5 (47–75)	72 (62–82)	77 (67–80)	.01*
Vitality	57 (40–70)	70 (65–75)	70 (55–80)	.03*
Social	87 (75–100)	88 (75–100)	88 (75–100)	.173
Emotional	100 (33–100)	100 (33–100)	100 (33–100)	.74
Mental	74 (56–80)	80 (72–88)	80 (64–88)	.02*

All data are reported as median (IQR) unless otherwise indicated. G1 = low level of physical activity; G2 = moderate level of physical activity; G3 = high level of physical activity; STAI = State-Trait Anxiety Inventory; PCS = Pain Catastrophizing Scale; FLQ = Fantastic Lifestyle Questionnaire; SF-36 = Short-Form Health Survey.
*$P < .05$.

Table 4 Analysis of Variance Results for Mechanical Quantitative Sensory Testing for the Factors Physical Activity Level, Test Site, Sex, and Lifestyle and Their Interactions

	MPT	WUR	PPT
Main effects			
Physical activity	F = 0.63, *P* = .53	F = 0.34, *P* = .71	F = 0.88, *P* = .41
Site	F = 0.00, *P* = .93	F = 0.85, *P* = .35	F = 233.94, *P* < .001*
Sex	F = 0.30, *P* = .58	F = 0.00, *P* = .96	F = 3.33, *P* = .07
Lifestyle	F = 0.19, *P* = .65	F = 0.00, *P* = .96	F = 0.23, *P* = .63
Effect size	NS	NS	0.74
Interactions			
Activity × site	F = 1.20, *P* = .30	F = 2.32, *P* = .10	F = 0.38, *P* = .68
Activity × sex	F = 2.08, *P* = .13	F = 0.23, *P* = .79	F = 0.23, *P* = .78
Activity × lifestyle	F = 0.57, *P* = .56	F = 0.39, *P* = .67	F = 1.54, *P* = .21
Site × sex	F = 0.02, *P* = .88	F = 0.51, *P* = .47	F = 0.80, *P* = .37
Site × lifestyle	F = 0.34, *P* = .55	F = 1.47, *P* = .22	F = 0.02, *P* = .88
Sex × lifestyle	F = 1.00, *P* = .31	F = 1.83, *P* = .17	F = 2.69, *P* = .10
Activity × site × sex	F = 1.40, *P* = .25	F = 3.10, *P* = .05	F = 2.72, *P* = .07
Activity × site × lifestyle	F = 0.50, *P* = .60	F = 0.08, *P* = .91	F = 0.19, *P* = .82
Activity × sex × lifestyle	F = 0.24, *P* = .78	F = 0.00, *P* = .99	F = 0.39, *P* = .67
Site × sex × lifestyle	F = 0.92, *P* = .33	F = 6.08, *P* = .01*	F = 0.00, *P* = .92
Activity × site × sex × lifestyle	F = 0.18, *P* = .83	F = 0.68, *P* = .50	F = 1.02, *P* = .36
Effect size	NS	0.07	NS

MPT = mechanical pain threshold; WUR = wind-up ratio; PPT = pressure pain threshold; NS = nonsignificant.
*$P < .05$.

Regular physical exercise and physical activity offer numerous health benefits, and the intensity, duration, and frequency are responsible for maintaining these benefits.[29] Psychosocial and behavioral aspects have been able to interfere with the modulation and perception of pain; however, the importance of each factor and its combination with activity levels is not fully known. Studies that seek to elucidate the impact of physical activity on psychosocial and somatosensory aspects are scarce in the literature, especially studies that focus on the sensitivity of the orofacial region. Therefore, this work presented data on the impact of self-reported physical exercise on the somatosensory sensitivity of orofacial structures in addition to comparing lifestyle and QoL, catastrophizing level, and anxiety among the different levels of physical activity.

Ellingson et al[30] evaluated the relationship between pain sensitivity and physical activity in 21 healthy women with a more specific instrument for classifying physical activity groups and showed that vigorous activity causes a reduction in pain intensity triggered by thermal stimuli applied to the thenar eminence of the right hand in healthy young women. The absence of an association between somatosensory tests in the orofacial region and the level of physical activity found in the present study may be directly related to the peculiarities of the trigeminal system, which is responsible for the stimuli in this region. The trigeminal system presents several differences when compared to those responsible for the innervation of other territories emerging from the spinal cord. The three branches of the trigeminal nerve present a series of interactions with other cranial systems and nerves, modulate the stimuli differently, and present differences among their three branches. Such differences might have influenced the present results when compared to other neural territories. In addition, all participants in this sample were asymptomatic, which naturally demonstrates "normality" of the somatosensory system. Participants who were difficult to categorize into one of the three groups and the mild disparities among them could also contribute to the lack of significant somatosensory profile differences. Based on this, it is difficult to assert that the intensity of an exercise routine does not impact the trigeminal somatosensory profile. In future studies comparing healthy and chronic TMD patients, significant differences related to physical exercise activity may be detected.

Regarding PPT in skeletal muscles, Andrzejewski et al[31] found higher pain thresholds in individuals who practiced vigorous activity compared to the moderate-activity group. Physical activity, even infrequent and/or not very intense, may be better than performing no activity whatsoever, although the minimum activity volume for general or specific health benefits is not yet clearly determined.[32] The particular implications of physical activity or exercise intensity in terms of health outcomes (ie, low vs moderate vs vigorous or high intensity) are not yet fully standardized.[29]

The regions of choice for performing somatosensory tests vary and do not follow a specific standardization, and there are few studies in the orofacial region. Lemming et al[33,34] found higher PPTs in the arm and leg regions in highly active compared to normally active groups (classification of activity level was based on another questionnaire and instrument of different algometry) in healthy participants. One explanation for this lack of impact of self-reported physical activity on orofacial sensitivity may be related to the fact that this subjective evaluation of physical exercise practice is not sensitive enough to detect significant differences. In the meta-analysis performed by Tesarz et al,[35] it has been suggested that exercise at an athletic level primarily affects pain tolerance, since athletes are required to develop skills to cope with pain because of intense physical training practice. This was not verified in the present study, as it included somatosensory tests in the orofacial region.

Although no significant effect of physical activity level or lifestyle was observed for any of the somatosensory mechanical variables, the interaction among region, sex, and QoL was significant for WUR values. This interaction, however, did not show significant results for the comparisons between the main pairs in the post hoc test. This fact may be related to the poor relative reliability of the WUR test, which in turn indicates that true differences between subjects are difficult to detect due to the high measurement error inherent in this test.[36] Increasing the sample size could minimize this matter in future studies. Another finding was the significant influence of test site on sensitivity, as the PPT values of the thenar region were higher than those of the anterior belly of the temporalis muscle. This finding corroborates previous findings by Quevedo,[37] who reported that PPT has significant region and sex effects, with pain thresholds at the temporalis muscle being lower when compared to the thenar region.[17,38] The specific mechanism of regional differences in sensitivity is not yet fully known, although receptive fields may play an important role.

Although there is positive evidence for health in relation to lifestyle and physical activity, it is observed that a large portion of the population does not follow an adequate lifestyle. The group with a low level of physical activity showed low scores in many SF-36 domains and lifestyle aspects, which was an expected finding, since individuals engaged in regular physical activity seem to have a more positive perception of QoL compared to those who are less physically active related to the ability to work, energy for day-to-day activities, and locomotion.[39]

As the present groups were asymptomatic, no significant differences were expected when anxiety and other psychosocial features were considered, which can be important when studying chronic pain patients. Physical inactivity may be a risk factor for the development of chronic pain and has been shown to facilitate neural responses to minor muscle problems.[40]

This is the first study devoted to investigating the association between physical activity levels and QST in the orofacial region in healthy participants. The self-reported aspect of physical activity, as well as the method used to classify participants and the reduced sample with a small difference among the three groups, are limitations of the present study. Future studies evaluating larger and more representative samples and applying objective physical activity tests are recommended to elucidate whether there is any association between somatosensory sensitivity and different levels of physical training.

Conclusions

Self-reported level of physical activity does not significantly influence mechanical somatosensory thresholds or temporal summation of pain in the orofacial region. Caution is suggested, however, when judging the present results, based on the small sample and the method used to determine the level of physical activity. Worse QoL was reported by participants reporting a low level of physical activity; thus, the self-reported practice of physical activity does not seem to be a potential modifier of the somatosensory response of masticatory structures.

Key Findings/Highlights

- Self-reported physical activity did not influence mechanical somatosensory thresholds in the orofacial region.
- Impaired quality of life was associated with low level of physical activity.

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