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Anxiety and Bodily Pain in Older Women Participants in a Physical Education Program. A Multiple Moderated Mediation Analysis

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Abstract: (1) Background: Bodily pain is normally associated with the consequences of ageing, whereas anxiety shows a high prevalence in elderly people, decreasing the health-related quality of life (HRQoL). Pain coping strategies are used to reduce the consequences of pain, specifically in older people. This study analyzed if the passive and active pain coping strategies were significant moderators in the link between anxiety and bodily pain with a physical component as a mediator. (2) Methods: This cross-sectional study consisted of older women between 60 and 90 years old from small villages with under 5000 inhabitants, of whom 53.8% of the total were participants of a physical education program. Participants of the present study completed all sociodemographic (living alone/accompanied, marital and educational status, number of illnesses, and level of physical activity (PA)) and clinical (anxiety, HRQoL, and pain coping strategies) questionnaires. Anxiety was assessed by the Hospitality Anxiety and Depression Scale (HAD), passive and active strategies by the Vanderbilt Pain Management Inventory (VPMI), and bodily pain and the physical component by the SF-36 questionnaire. (3) Results: The physical component positively predicted bodily pain ($p < 0.001$) and passive strategies significantly moderated the effect of anxiety on the physical component ($p = 0.034$). (4) Conclusions: These outcomes help to understand the link between anxiety and bodily pain in older women and the moderation of pain coping strategies in this relationship. In addition, the physical component should be considered when physical education programs aimed at the reduction of bodily pain through the management of anxiety are designed.

Keywords: aging; physical health; physical activity; pain strategies; anxiety symptom

1. Introduction

Nowadays, more than two-thirds of people who need medical care have two or more chronic conditions and over 15% present more than six chronic conditions [1]. The group of older people is the most vulnerable because of their health care needs [2] and chronic conditions' effects are usually related to poor perceived health-related quality of life (HRQoL) [3–5], feelings of bodily pain feelings [4,6], and higher anxiety disorders [7].

The impact of bodily pain on older people's daily lives is well known and higher experiences of chronic pain are usually associated with this population [8]. Normally, chronic pain appears in up to 50% of the older population [9], and it is associated with a multitude of illnesses. Psychological and musculoskeletal system disorders, both associated with the repercussion of pain, are affected by chronic pain and affect negatively HRQoL [10–12]. Therefore, knowledge of the repercussions of pain in older people's daily lives is necessary to understand their psychological status [11]. The negative behaviors and unhealthy habits of older people considerably decrease the HRQoL, specifically in women [4,5,13]. The impact of bodily pain on older people is associated with the risk of experiencing chronic pain and, therefore, a negative interpretation of physical HRQoL dimensions [14,15].

Psychological disorders normally appear during the ageing process and may affect the quality of life and functionality of older people. Late-life anxiety, especially, shows a high prevalence in this population with negative consequences on their health [16]. Disabilities, a reduction of social support, and a decrease of HRQoL are some of the consequences of a high prevalence of anxiety in older people [17]. Concretely, anxiety is more disabling than other illnesses such as back pain and neck pain, arthritis, or cancer in people's social lives [18]. In this context, anxiety is understood as a threat to older people [19]. However, the prevention of new cases of mental disorders is being improved by medical treatments [20] or physical exercise intervention treatments [21].

Anxiety is normally associated with chronic pain in the older population and, specifically, women show more prevalence to this association than men [22]. The authors also suggest the need to develop adequate strategies to reduce the negative impact of pain on quality of life within the older population. The importance of pain coping strategies within the older population directly influences the HRQoL of this population [4,23]. The consequences of chronic pain within this sample population are significant to their health and the use of passive strategies to cope with chronic pain is more common in this population than others [24]. However, members of the older population who are more active in their daily lives show a higher level of active pain coping strategies [6].

Therefore, the aim of this study was, to the best of our knowledge, to determine the mediating role in the link between anxiety and bodily pain and the multiple moderation of passive strategies (between anxiety and the physical component) and active pain strategies (between the physical component and bodily pain) in older women participants of a physical education program (Figure 1). This aim is a remarkable novelty of our study, as we have not found other studies with the same variables and similar multiple moderated mediation analysis in the specialized literature.

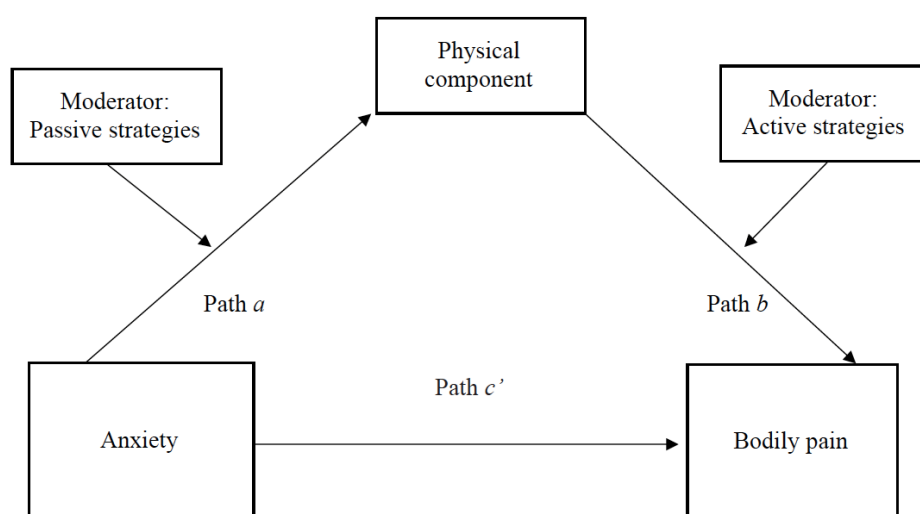


Figure 1. Hypothetical model of the relationship between anxiety and bodily pain through a physical component and moderated by passive and active strategies.

2. Materials and Methods

2.1. Participants

A total of 183 older women over 60 years old ($M_{\text{age}} = 68.8$, $SD = 5.3$) were recruited from villages of the province of Málaga with a population ranging from 2000 to 5000 inhabitants, according to the National Institute of Statistics of the Spanish Government [25], by via telephone or direct contact. Considering a statistical power of 80%, a type 1 error or alpha of 0.05, and a sample population of older women over 60 years from these villages ($n = 1.011$), we had to work with a minimum sample of 122 older women. Only female participants were recruited in this study to avoid low statistical results because of the scarcity of male participants (only two males). The sample size was calculated at a 95% confidence level on women between 60 and 90 years old. A physical education program, supervised by a specialist, was attended regularly by 53.8% of participants. The majority of participants lived accompanied (73.6%), while 26.4% lived alone. More than half of the participants had a partner or were married (63.2%), while 28% were widowed, 4.4% were divorced or separated, and 4.4% were single. The older women of the present study showed a relatively low educational status, as more than half had no formal education although they could read and write (55%), 39.4% had reached primary education level, 5% had reached secondary education level, and only 0.6% had reached university education. Most of the participants informed us that they suffered three or fewer illnesses (77.6%), while 15.9% had four or five illnesses, and 6.5% had over six illnesses. The level of physical activity (PA) was vigorous in half of the sample (53%), moderate in 14.2%, and low in 32.8% of the total of the sample according to the International Physical Questionnaire (IPAQ).

The inclusion criteria for the total sample of older women in this study were [4]: (1) being in the age range of between 60 and 90 years old; (2) not having severe somatic or psychiatric disorders or diseases that prevent physical loading; (3) being able to walk without assistance; (4) being able to communicate; (5) being capable and willing to provide informed consent and the study's requirements. This study was conducted in accordance with the ethical principles of the Declaration of Helsinki [26], and the protocol was approved by the University of Granada and Malaga Provincial Council, Sports Area.

2.2. Measurements

- *Sociodemographic characteristics*

Sociodemographic characteristics such as living alone/accompanied, marital status, educational status, and the number of illnesses were assessed by one standardized questionnaire [4]. Moreover, the level of PA was assessed by the Spanish version of the IPAQ for the elderly [27]. The IPAQ long version (31 items) was used to obtain the PA levels of participants and classify them into three categories (vigorous, moderate, and low) by the metabolic equivalent of task (MET) energy expenditure estimated in the last seven days.

- *Health-related Quality of life by the SF-36 Health Survey (SF-36)*

The Spanish version of the SF-36 Health Survey [28] was used to assess the HRQoL of the older women. A total of 36 items made up this questionnaire, grouped into two components and four dimensions each: the physical component (physical functioning, physical role, bodily pain, and general health) and the mental component (vitality, social functioning, emotional role, and mental health). The present study uses the physical component as a mediator and bodily pain as a dependent variable. The answer format was a yes or no alternative and a response scale from three to six. Each component score was standardized and ranges from 0 to 100, where 0 indicated the worst possible health status and 100 the best possible.

- *Pain coping strategies by Vanderbilt Pain Management Inventory (VPMI)*

The Spanish version [24] of the Vanderbilt Pain Management Inventory (VPMI) [29] was used to assess pain coping strategies, grouped into two strategies (passive and active strategies) with a total of

18 items. These two strategies assess how often chronic pain sufferers use active and passive coping strategies. The frequency with which patients use each strategy when their pain reaches a moderate or greater level of intensity is rated on a 5-point scale. Seven of the item scores are summed to create the active coping score, and the remaining 11 items are summed to create the passive coping score. An active coping strategy means that patients attempt to function despite their pain (e.g., behavioral coping or pain suppression), and a passive coping strategy is when patients relinquish control of their pain to others or allow other areas of their life to be adversely affected by pain (e.g., catastrophizing or social support seeking) [23].

- *Anxiety by Hospital Anxiety and Depression Scale (HADS)*

The Spanish version of the Hospital Anxiety and Depression Scale (HADS) [30] was used to identify the anxiety subscale among older women participants in the physical education program. The HADS is divided into two subscales (anxiety and depression), both with seven intermingled items. In this sense, it should be noted that we used specifically the anxiety subscale as an independent variable in the present study. The scores of the anxiety subscale ranged from 0 to 21 where a low anxiety was a score <8, mild anxiety between 8 and 10, and moderate anxiety between 11 and 15.

2.3. Procedure

All the participants were given specific information questionnaires about the number of illnesses, medical treatments, medicines, or disabilities to verify whether they were eligible under the inclusion and exclusion criteria. After providing information about the study (the main aim, the expected duration of the questionnaire interview, and the procedures), the form for agreement of participation was signed. All older women in the present study were cited two days to complete the measurement protocol. The first day, they had to complete the following assessments in order of presentation: clinical and sociodemographic characteristics information. A day after, they filled in the questionnaires related to HRQoL (SF-36) and pain coping strategies (VPMI).

The interviewer read each question aloud and recorded the participant's answer on the answer sheet; participants had showcards with the answer options for each scale.

The physical education program which 53.8% of the older women were attending consisted of music-based aerobics and Pilates [31]. Participants took part twice per week and each session lasted 45–50 mins, and we followed the guidelines of the American College of Sport Medicine [32] to ensure the safety of the participants.

2.4. Statistical Analyses

The normal distribution of data was studied using the Kolmogorov-Smirnov test. All variables studied showed a normal distribution. Percentages were calculated for all sociodemographic variables (living alone/accompanied, marital status, educational status, and number of illnesses) and level of PA (vigorous, moderate, and low). The mean and standard deviation of the age of participants, pain coping strategies (passive and active), the physical component, anxiety, and bodily pain were performed on the older women in the present study.

The reliability of the data on the five variables included in the multiple moderated mediation analysis (Figure 1) was performed by Cronbach's Alpha ($\alpha = 0.71$).

The association between continuous variables (age, anxiety, passive strategies and active strategies, the physical component, and bodily pain) were analyzed by Pearson's correlation coefficient. The correlation values for performance-based tests were interpreted as follows: weak or no relationship ($r = 0$ to 0.25), fair degree (0.25 to 0.50), and moderate to good ($r = 0.50$ to 0.75) [33].

In order to assess whether the association between anxiety (independent variable) and bodily pain (dependent variable) was mediated by the physical component, a multiple moderated mediation (statistical diagram in Figure 2) analysis controlled by the age and number of illnesses was fitted using bias-corrected bootstrapped mediation procedures [34]. Bootstrapping is a non-parametric

resampling method which involves repeatedly extracting samples from the data by randomly sampling with replacement and estimating the indirect effect in each resampled data set [35]. This multiple moderated mediation analysis was performed using the PROCESS macro for SPSS, model 21 [34]. Passive strategies were entered as moderators of the relationship between anxiety and the physical component, and active strategies were entered as moderators between the physical component and bodily pain. Bias-corrected bootstrap based on 10,000 bootstrap samples with confidence intervals (CIs, 95%) was used to test the statistical significance of the indirect and direct effects in the multiple moderated mediation analysis. If there was not a zero in the confidence intervals, the effect was considered as significant. Finally, the absence of collinearity assumptions (using correlation matrix, variance inflation factor-VFI, and eigenvalues) were tested for the physical component and bodily pain.

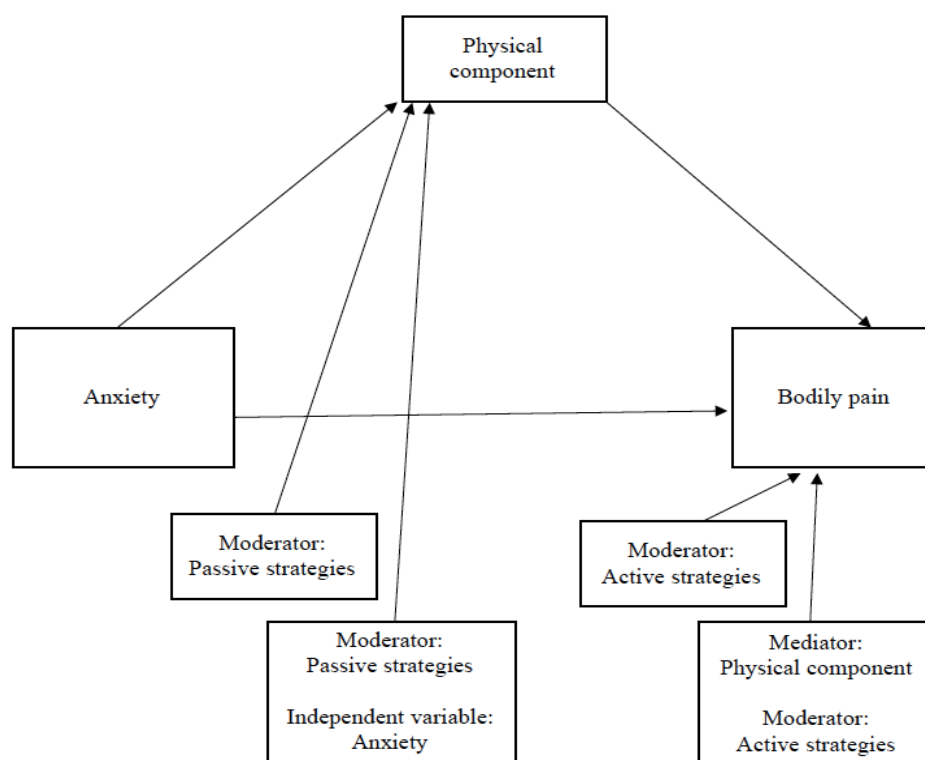


Figure 2. Statistical diagram of the conditional indirect effect of anxiety on bodily pain through the physical component as the mediator and passive/active strategies as moderators.

All statistical analyses were performed using the Statistical Package for Social Science (IBM SPSS Statistics for Windows 21.0. Armonk, NY, USA).

3. Results

The mean scores obtained in the pain coping strategies were 21.2 ± 6.07 for passive strategies and 16.7 ± 4.53 for active strategies. The HRQoL physical component scored 56.16 ± 16.83 . Regarding anxiety, this subscale of the Hospital Anxiety and Depression Scale (HADS) scored 11.94 ± 2.88 among the participants. Finally, bodily pain scored 55.89 ± 26.83 in a range from 0 (the worst score) to 100 (the best score).

3.1. Anxiety, Passive and Active strategies, the Physical Component, and Bodily Pain

Table 1 shows correlations between the study variables. The results showed that anxiety was negatively associated with passive strategies and positively associated with active strategies and physical components. Moreover, strong positive correlations were found between anxiety and bodily pain. Additionally, bodily pain showed a strong positive correlation with the physical component.

Table 1. Means, standard deviations, and Pearson's correlations of age, anxiety, pain coping strategies (passive and active), the physical component and bodily pain (n = 340).

Sociodemographic and Clinical Variables	1	2	3	4	5	6
1. Age	-					
2. Anxiety	0.126 **	-				
3. Passive strategies (VPMI)	-0.021	-0.267 ***	-			
4. Active strategies (VPMI)	0.028	0.157 **	-0.149 **	-		
5. Physical component (SF-36)	-0.100 *	0.278 ***	-0.444 ***	0.084	-	
6. Bodily pain	-0.019	0.286	-0.510	0.049	0.753 ***	-
M (SD)	68.8 (5.37)	11.9 (2.88)	21.2 (6.07)	16.7 (4.53)	56.2 (16.8)	55.9 (26.8)

Correlations were significant at * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. M = mean, SD = Standard deviations.

3.2. Results of the Multiple Moderated Mediation Analysis

The multiple moderated mediation analysis using the 10,000 bootstrap and bias-corrected and accelerated 95% CI [34] revealed that the total direct effect (path c) from anxiety to bodily pain was significant, with a coefficient = 1.03 (95% CI: 0.14 to 2.05, $p = 0.046$) (Table 2). Anxiety was not associated with the physical component in the first regression equation (path a), with a coefficient = 0.41 (95% CI: -2.12 to 2.92, $p = 0.753$). In the second equation, the physical component positively predicted bodily pain (path b), with a coefficient = 1.03 (95% CI: 0.14 to 2.05, $p < 0.001$).

Table 2. Moderated mediation results for the relationship between anxiety and bodily pain (n = 183).

Moderated Mediation Results	Coefficient	SE	p -Value	LLCI	ULCI
Outcome: physical component					
R = 0.60, F (5, 159) = 17.92, $p < 0.001$					
Anxiety	0.402	1.27	0.753	-2.12	2.92
Passive strategies	-1.44	0.673	0.034	-2.77	-0.112
Outcome: bodily pain					
R = 0.77, F (6, 158) = 39.27, $p < 0.001$					
Physical component	1.61	0.328	0.001	0.955	2.25
Anxiety	1.03	0.515	0.046	0.014	2.05
Active strategies	1.32	1.16	0.254	-0.965	3.62
Direct effect of anxiety on bodily pain	Effect	SE	p -value	LLCI	ULCI
	1.03	0.515	0.046	0.014	2.05
Conditional moderated mediation at (high):		Index	SE	LLCI	ULCI
Passive strategies		0.043	0.061	-0.068	0.172
Active strategies		-0.039	0.029	-0.117	0.004

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; SE = Standard Error; LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval. Analysis of covariance controlling for age and number of illnesses.

The indirect effect of anxiety predicting bodily pain through the physical component was conditional on pain coping strategies (passive and active). Passive strategies significantly moderated the effect of anxiety on the physical component, coefficient = -1.44 (95% CI: -2.77 to -0.11, $p = 0.034$) (passive strategies_{high} = 0.04 with 95% CI: -0.07 to 0.172). However, active strategies were not a significant moderator between the physical component and bodily pain, with a coefficient = 1.32 (95% CI: -0.96 to 3.62, $p = 0.254$) (active strategies_{high} = -0.04 with 95% CI: -0.11 to 0.004).

4. Discussion

The aim of the present study was to determine the mediator's role in the link between anxiety and bodily pain and the multiple moderation of passive strategies (between anxiety and the physical component) and active strategies (between the physical component and bodily pain) in older women participants of a physical education program.

Results showed that inverse passive strategies were a significant moderator in the link between the worst anxiety and the physical component. Older women of the present study experienced anxiety in their daily lives but they decided to actively confront bodily pain without a passive attitude. Seen in another way, they preferred to use active pain coping strategies. There is a multitude of reasons for which the older population use passive or active coping strategies against bodily pain and chronic pain. However, those who avoid passing control of their own feelings of pain to others were highly present in this study.

Anxiety is a complex feeling of worry about future events associated with uncertainty and a lack of managing a situation [36]. Several studies have found an association between anxiety symptoms and bodily pain [6,22,37,38]. In addition, anxiety and bodily pain are strongly prevalent problems, which affect the HRQoL of the older population [36], specifically in regard to mobility problems and physical health [4,37]. Nevertheless, the use of low passive strategies as behavioral coping strategies could have a positive influence and lead to better pain coping because of the decrease of anxiety management with the attempt to reduce bodily pain through specific behaviors and cognitions [4,24,39]. On the other hand, a passive strategy is social support seeking, which serves as a protective function with respect to anxiety in older populations with chronic pain [40,41]. This passive strategy is associated with people who need support from others to overcome anxiety symptoms [41]. Participants of our study mostly lived accompanied and they would not have felt loneliness or incomprehension. In addition, this could be the reason for which they did not show the need for the social support seeking of other people, such as a disorder-specialist physician.

Passive strategies are normally used by people with pain and prescribed by physicians. However, self-efficacy of non-passive strategies as medical, physical, and therapeutic treatments focused on the self-management of physical and mental capacity normally shows satisfactory effects in the management of different pain manifestations [4,42]. Older women in the present study could experience reduced pain perception because of the moderate and vigorous level of PA shown in their daily lives. Probably, some tasks of this PA are physical exercise and there is evidence of a major release of endorphins. According to the current literature [43], there are higher levels of personal autonomy in older people who are practitioners of physical exercise.

Furthermore, the profile of the older women in this study might represent women from a rural context, where they normally have to be active in their daily lives (e.g., go shopping by walking, doing the housework, the care of the land, etc.). Thus, negative thoughts and emotions regarding pain would not have space in the lives of these women because they are busy with multiple tasks. In line with this, the occupational and social status of large Chinese adult and older people sample populations that were studied showed that people with working conditions related to a rural context and rural status were not more susceptible to suffering a worse health status than people from cities [44]. However, Wang's study showed that older women from rural areas reported frequent problems in usual activities and a strong association of daily activities with pain and lower HRQoL [45]. Consequently, further studies need to go in depth in the analysis of the occupation of older women in the rural context and their pain coping strategies.

Active strategies such as PA are a connection between enhanced health and well-being in older people. Thus, PA could be another possible reason that explains the inverse moderation role of passive strategies between anxiety and the physical component in our study. The regular practice of PA helps to decrease the effects of pain in the daily life activities of older people and therefore, reduces anxiety [4,46]. A multitude of studies about the effects of PA with a regular moderately vigorous intensity has shown that pain-coping passive strategies are used to a lesser degree by older practitioners [4,39]. Additionally, it is remarkable that there is a significant relationship between anxiety and low levels of PA in older people [47]. PA as an active strategy is engaged to increase the social interaction of older people and produces a better self-control of emotions [48] and, therefore, a better control of anxiety.

Regarding the mediation link between the physical component and bodily pain, stopping to do daily tasks [4] or PA [49] might generate a considerable impact on bodily pain because the direct

effect of anxiety on bodily pain would be greater [10,39]. Regular PA is related to the use of less pain-coping passive strategies and, therefore, the pain perception decreases because the older people are not constantly thinking of their pain and its effects [50]. It is necessary to highlight that PA could reduce the perception of pain because the PA produces an improvement in the musculoskeletal system, and the effect of pain in the musculoskeletal system is less [4,11,31].

Lower HRQoL among adult and older women, especially the physical component, bodily pain, and anxiety, are understood as a global problem, with an association between all of them [45]. Physical disorders, disabilities in activities, and a poor physical role might be possible causes of poor HRQoL [4,45,51], including the physical component such as a physical role, physical functioning, general health, etc. The association of anxiety and bodily pain is probably one of the most prevalent problems in the poor HRQoL of older people [17,36]. In this connection, the role of the physical component could be a strong predictor of the association between anxiety and bodily pain due to the direct relationship of lower pain perception with a higher physical component score of HRQoL [52] and both of these with anxiety [15,53].

In addition, to reduce passive strategies, the use of other active strategies, such as physical education programs focused on the improvement of older people's daily lives through adequate healthy habits, might be useful methods to improve bodily pain when there is a high anxiety perception. Likewise, bodily pain could experience a decrease because the educative habits learned by older women would help to control it. In line with this, a considerable group of older women in this study attended a mixed physical interventional program with an educative component. This fact could provide multiple benefits. First, PA is associated with a higher level of social relations with other people, and the effects on health are obvious because anxiety is combated with social support and social events decrease the risk of experiencing chronic bodily pain (21). Secondly, previous studies have indicated that being physically active together, with healthy notions learned by older people, is associated with active coping strategies and, therefore, the reduction of bodily pain perception is evident [6,31,54]. Finally, PA and health education through specific social programs produce positive behavioral changes in psychological variables and HRQoL, such as bodily pain and physical components [55].

5. Conclusions

The present study shows, as its main outcome, the importance of adequate pain-coping strategies in decreasing anxiety perception in older women and, therefore, decreasing the bodily pain consequences. Participants in this study with higher anxiety perception used scarce passive strategies and the effect on the impact of bodily pain was minor. Moreover, a better score in the physical component was also associated with less impact of bodily pain.

There are some limitations in the present study which could affect the interpretation of the findings. The results of the multiple moderated mediation analysis should be interpreted cautiously due to the cross-sectional design. We assumed that a lower use of passive strategies predicts the relationship between anxiety and the physical component and the physical component helps to cope with bodily pain. Moreover, it is necessary to highlight that the correlation between anxiety and bodily pain was not significant (Table 1), whereas the total direct effect (path *c*) from anxiety to bodily pain (Table 2) was weakly significant. This means that we should be careful with the interpretation of the results of path *c*. Thus, future studies should use longitudinal designs to test the link between anxiety and bodily pain. In addition, future studies should explore more psychological variables in a larger and more diverse sample of older people.

Despite limitations, this study contributes to a better understanding of the mechanisms that link anxiety and bodily pain through the physical component as a mediator and pain coping strategies (passive and active) as moderators. We suggest that the reduction of passive strategies and a higher physical component used to cope with the bodily pain could explain a possible decrease in bodily pain perception.

These results are useful in managing the influence of anxiety on bodily pain perception in older people's daily lives, reducing severe psychological disorders. Anxiety could be managed by alternative strategies, different from passive ones. One of these alternative strategies could even mix both passive and active strategies. Of course, older people with a high presence of a physical component in their daily lives also have reduced bodily pain when this variable comes from the direct effect of anxiety. Thus, it would be possible to modify educative and physical interventions to improve older people's perceptions, which included the performance of their daily lives.

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Conflicts of Interest: The authors declare no conflict of interest.

References

- Lochner, K.A.; Shoff, C.M. County-level variation in prevalence of multiple chronic conditions among Medicare beneficiaries, 2012. *Prev. Chronic. Dis.* **2015**, *12*, E07. [[CrossRef](#)] [[PubMed](#)]
- Koroukian, S.M.; Schiltz, N.; Warner, D.F.; Sun, J.; Bakaki, P.M.; Smyth, K.A.; Stange, K.C.; Given, C.W. Combinations of Chronic Conditions, Functional Limitations, and Geriatric Syndromes that Predict Health Outcomes. *J. Gen. Intern. Med.* **2016**, *31*, 630–637. [[CrossRef](#)] [[PubMed](#)]
- Onetti-Onetti, W.; Castillo-Rodríguez, C.L.; Castillo-Rodríguez, C. Assessment of elderly people characteristics and their relationship with the perceived quality of sport management. *Rev. Iberoam. Ciencias Act. Física Deport.* **2018**, *8*, 110–118.
- Ruiz-Montero, P.J.; Ruiz-Rico Ruiz, G.J.; Martín-Moya, R.; González-Matarín, P.J. Do health-related quality of life and pain-coping strategies explain the relationship between older women participants in a pilates-aerobic program and bodily pain? A multiple mediation model. *Int. J. Environ. Res. Public Health* **2019**, *16*, 3249. [[CrossRef](#)] [[PubMed](#)]
- Ruiz-Montero, P.J.; Castillo-Rodríguez, A.; Mikalacki, M.; Delgado-Fernandez, M. Physical Fitness Comparison and Quality of Life between Spanish and Serbian Elderly Women through a Physical Fitness Program. *Coll. Antropol.* **2015**, *39*, 411–417. [[PubMed](#)]
- Rubio, L.; Dumitrache, C.G.; García, A.J.; Córdón-Pozo, E. Coping strategies in Spanish older adults: A MIMIC model of socio-demographic characteristics and activity level. *Aging Ment. Health* **2018**, *22*, 226–232. [[CrossRef](#)] [[PubMed](#)]
- Roh, H.W.; Lee, Y.; Lee, K.; Chang, K.; Jinhee, K.; Lee, S.; Back, J.; Chung, Y.K.; Lim, K.; Noh, J.; et al. Frequency of contact with non-cohabitating adult children and risk of depression in elderly: A community-based three-year longitudinal study in Korea. *Arch. Gerontol. Geriatr.* **2014**, *60*, 183–189. [[CrossRef](#)]
- Morone, N.E.; Greco, C.M. Mind-body interventions for chronic pain in older adults: A structured review. *Pain Med.* **2007**, *8*, 359–375. [[CrossRef](#)]
- Helme, R.D.; Gibson, S.J. The epidemiology of pain in elderly people. *Clin. Geriatr. Med.* **2001**, *17*, 417–431. [[CrossRef](#)]
- Castillo, R.C.; Wegener, S.T.; Heins, S.E.; Haythornthwaite, J.A.; Mackenzie, E.J.; Bosse, M.J. Longitudinal relationships between anxiety, depression, and pain: Results from a two-year cohort study of lower extremity trauma patients. *Pain* **2013**, *154*, 2860–2866. [[CrossRef](#)]
- Novotny, S.A.; Warren, G.L.; Hamrick, M.W. Aging and the muscle-bone relationship. *Physiology* **2015**, *30*, 8–16. [[CrossRef](#)] [[PubMed](#)]

12. Silva, A.G.; Alvarelhao, J.; Queiros, A.; Rocha, N.P. Pain intensity is associated with self-reported disability for several domains of life in a sample of patients with musculoskeletal pain aged 50 or more. *Disabil. Health J.* **2013**, *6*, 369–376. [[CrossRef](#)] [[PubMed](#)]
13. Ikezoe, T.; Asakawa, Y.; Shima, H.; Kishibuchi, K.; Ichihashi, N. Daytime physical activity patterns and physical fitness in institutionalized elderly women: An exploratory study. *Arch. Gerontol. Geriatr.* **2013**, *57*, 221–225. [[CrossRef](#)] [[PubMed](#)]
14. Johannes, C.B.; Le, T.K.; Zhou, X.; Johnston, J.A.; Dworkin, R.H. The prevalence of chronic pain in United States adults: Results of an Internet-based survey. *J. Pain* **2010**, *11*, 1230–1239. [[CrossRef](#)] [[PubMed](#)]
15. Gerino, E.; Rolle, L.; Sechi, C.; Brustia, P. Loneliness, Resilience, Mental Health, and Quality of Life in Old Age: A Structural Equation Model. *Front. Psychol.* **2017**, *8*, 2003. [[CrossRef](#)] [[PubMed](#)]
16. Smit, F.; Ederveen, A.; Cuijpers, P.; Deeg, D.; Beekman, A. Opportunities for cost-effective prevention of late-life depression: An epidemiological approach. *Arch. Gen. Psychiatry* **2006**, *63*, 290–296. [[CrossRef](#)]
17. Wariso, B.A.; Guerrieri, G.M.; Thompson, K.; Koziol, D.E.; Haq, N.; Martinez, P.E.; Rubinow, D.R.; Schmidt, P.J. Depression during the menopause transition: Impact on quality of life, social adjustment, and disability. *Arch. Womens. Ment. Health* **2017**, *20*, 273–282. [[CrossRef](#)]
18. Ormel, J.; Petukhova, M.; Chatterji, S.; Aguilar-Gaxiola, S.; Alonso, J.; Angermeyer, M.C.; Bromet, E.J.; Burger, H.; Demyttenaere, K.; de Girolamo, G.; et al. Disability and treatment of specific mental and physical disorders across the world. *Br. J. Psychiatry* **2008**, *192*, 368–375. [[CrossRef](#)]
19. van 't Veer-Tazelaar, N.; van Marwijk, H.; van Oppen, P.; Nijpels, G.; van Hout, H.; Cuijpers, P.; Stalman, W.; Beekman, A. Prevention of anxiety and depression in the age group of 75 years and over: A randomised controlled trial testing the feasibility and effectiveness of a generic stepped care programme among elderly community residents at high risk of developing anxiety a. *BMC Public Health* **2006**, *6*, 186. [[CrossRef](#)]
20. Cuijpers, P.; Van Straten, A.; Smit, F. Preventing the incidence of new cases of mental disorders: A meta-analytic review. *J. Nerv. Ment. Dis.* **2005**, *193*, 119–125. [[CrossRef](#)]
21. Miller, K.J.; Mesagno, C.; McLaren, S.; Grace, F.; Yates, M.; Gomez, R. Exercise, Mood, Self-Efficacy, and Social Support as Predictors of Depressive Symptoms in Older Adults: Direct and Interaction Effects. *Front. Psychol.* **2019**, *10*, 2145. [[CrossRef](#)] [[PubMed](#)]
22. Akram, M.J.; Malik, A.N. Frequency of chronic neuropathic pain and its association with depression in the elderly in Pakistan. *J. Pak. Med. Assoc.* **2019**, *69*, 1907–1909. [[CrossRef](#)] [[PubMed](#)]
23. Carbonell-Baeza, A.; Ruiz, J.R.; Aparicio, V.A.; Ortega, F.B.; Delgado-Fernandez, M. The 6-minute walk test in female fibromyalgia patients: Relationship with tenderness, symptomatology, quality of life, and coping strategies. *Pain Manag. Nurs.* **2013**, *14*, 193–199. [[CrossRef](#)] [[PubMed](#)]
24. Esteve, M.R.; Ramírez, C.; López, A.E. Índices generales versus específicos en la evaluación del afrontamiento al dolor crónico. = General versus specific indexes in chronic pain coping assessment. *Psicothema* **2004**, *16*, 421–428.
25. Spanish Government National Institute of Statistics. Available online: <http://www.ine.es> (accessed on 12 May 2020).
26. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA* **2013**, *310*, 2191–2194. [[CrossRef](#)] [[PubMed](#)]
27. Rubio Castañeda, F.J.; Tomas Aznar, C.; Muro Baquero, C. Validity, Reliability and Associated Factors of the International Physical Activity Questionnaire Adapted to Elderly (IPAQ-E). Available online: <https://europepmc.org/article/med/28098134> (accessed on 12 May 2020).
28. Alonso, J.; Prieto, L.; Anto, J.M. The Spanish version of the SF-36 Health Survey (the SF-36 health questionnaire): An instrument for measuring clinical results. *Med. Clin.* **1995**, *104*, 771–776.
29. Brown, G.K.; Nicassio, P.M. Development of a questionnaire for the assessment of active and passive coping strategies in chronic pain patients. *Pain* **1987**, *31*, 53–64. [[CrossRef](#)]
30. Quintana, J.M.; Padierna, A.; Esteban, C.; Arostegui, I.; Bilbao, A.; Ruiz, I. Evaluation of the psychometric characteristics of the Spanish version of the Hospital Anxiety and Depression Scale. *Acta Psychiatr. Scand.* **2003**, *107*, 216–221. [[CrossRef](#)]
31. Jesus Ruiz-Montero, P.; Castillo-Rodriguez, A.; Mikalacki, M.; Nebojsa, C.; Korovljev, D. 24-weeks Pilates-aerobic and educative training to improve body fat mass in elderly Serbian women. *Clin. Interv. Aging* **2014**, *9*, 243–248. [[CrossRef](#)]

32. American College of Sport Medicine. *ACSM's Guidelines for Exercise Testing and Prescription*, 10th ed.; Wolters Kluwer: Philadelphia, PA, USA, 2018.
33. Mannerkorpi, K.; Svantesson, U.; Broberg, C. Relationships between performance-based tests and patients' ratings of activity limitations, self-efficacy, and pain in fibromyalgia. *Arch. Phys. Med. Rehabil.* **2006**, *87*, 259–264. [[CrossRef](#)] [[PubMed](#)]
34. Hayes, A.F. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, 2nd ed.; Guilford Press: New York, NY, USA, 2017.
35. Preacher, K.J.; Hayes, A.F. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behav. Res. Methods* **2008**, *40*, 879–891. [[CrossRef](#)] [[PubMed](#)]
36. Al-Amer, R.; Subih, M.; Aldaraawi, H.; Randall, S.; Othman, W.M.M.; Salamonson, Y. Prevalence of Depression and Its Influence on the Quality of Life of Jordanians Living in Residential Care Facilities. *J. Nurs. Res.* **2019**, *27*, e54. [[CrossRef](#)] [[PubMed](#)]
37. Ahmed, D.; El Shair, I.H.; Taher, E.; Zyada, F. Prevalence and predictors of depression and anxiety among the elderly population living in geriatric homes in Cairo, Egypt. *J. Egypt. Public Health Assoc.* **2014**, *89*, 127–135. [[CrossRef](#)]
38. Creighton, A.S.; Davison, T.E.; Kissane, D.W. The correlates of anxiety among older adults in nursing homes and other residential aged care facilities: A systematic review. *Int. J. Geriatr. Psychiatry* **2017**, *32*, 141–154. [[CrossRef](#)]
39. Marshall, P.W.M.; Schabrun, S.; Knox, M.F. Physical activity and the mediating effect of fear, depression, anxiety, and catastrophizing on pain related disability in people with chronic low back pain. *PLoS ONE* **2017**, *12*, e0180788. [[CrossRef](#)]
40. Ferreira, V.M.; Sherman, A.M. The relationship of optimism, pain and social support to well-being in older adults with osteoarthritis. *Aging Ment. Health* **2007**, *11*, 89–98. [[CrossRef](#)]
41. Warner, C.B.; Roberts, A.R.; Jeanblanc, A.B.; Adams, K.B. Coping Resources, Loneliness, and Depressive Symptoms of Older Women With Chronic Illness. *J. Appl. Gerontol.* **2017**. [[CrossRef](#)]
42. Schiltewolf, M.; Schwarze, M. Diagnostics and therapy of back pain: What is advisable? What should be avoided and why is it still done? *Bundesgesundheitsblatt Gesundh. Gesundh.* **2020**, *63*, 527–534. [[CrossRef](#)]
43. Amin, F.M.; Aristeidou, S.; Baraldi, C.; Czapinska-Ciepiela, E.K.; Ariadni, D.D.; Di Lenola, D.; Fenech, C.; Kampouris, K.; Karagiorgis, G.; Braschinsky, M.; et al. The association between migraine and physical exercise. *J. Headache Pain* **2018**, *19*, 83. [[CrossRef](#)]
44. Xie, Z.; Poon, A.N.; Wu, Z.; Jian, W.; Chan, K.Y. Is Occupation a Good Predictor of Self-Rated Health in China? *PLoS ONE* **2015**, *10*, e0125274. [[CrossRef](#)] [[PubMed](#)]
45. Wang, H.; Pan, Y.; Guo, C.; Li, F.; Xu, R.; Liu, M.; Liu, Z.; Liu, F.; Cai, H.; Ke, Y.; et al. Health-related quality of life among rural residents aged 45–69 years in Hua County, Henan Province, China: Results of ESECC Trial for esophageal cancer screening with endoscopy. *Chin. J. Cancer Res.* **2018**, *30*, 240. [[CrossRef](#)] [[PubMed](#)]
46. Andrade-Gomez, E.; Martinez-Gomez, D.; Rodriguez-Artalejo, F.; Garcia-Esquinas, E. Sedentary behaviors, physical activity, and changes in depression and psychological distress symptoms in older adults. *Depress. Anxiety* **2018**, *35*, 884–897. [[CrossRef](#)] [[PubMed](#)]
47. Arts, M.H.L.; Collard, R.M.; Comijs, H.C.; Zuidersma, M.; de Rooij, S.E.; Naarding, P.; Oude Voshaar, R.C. Physical Frailty and Cognitive Functioning in Depressed Older Adults: Findings From the NESDO Study. *J. Am. Med. Dir. Assoc.* **2016**, *17*, 36–43. [[CrossRef](#)] [[PubMed](#)]
48. Bennett, E.; Clarke, L.; Kowalski, K.; Crocker, P. From pleasure and pride to the fear of decline: Exploring the emotions in older women's physical activity narratives. *Psychol. Sport Exerc.* **2017**, *33*, 113–122. [[CrossRef](#)]
49. Cheung, C.; Park, J.; Wyman, J.F. Effects of Yoga on Symptoms, Physical Function, and Psychosocial Outcomes in Adults with Osteoarthritis: A Focused Review. *Am. J. Phys. Med. Rehabil.* **2016**, *95*, 139–151. [[CrossRef](#)]
50. Davenport, M.H.; Marchand, A.-A.; Mottola, M.F.; Poitras, V.J.; Gray, C.E.; Jaramillo Garcia, A.; Barrowman, N.; Sobierajski, F.; James, M.; Meah, V.L.; et al. Exercise for the prevention and treatment of low back, pelvic girdle and lumbopelvic pain during pregnancy: A systematic review and meta-analysis. *Br. J. Sports Med.* **2019**, *53*, 90–98. [[CrossRef](#)]
51. Zeng, Y.; Feng, Q.; Hesketh, T.; Christensen, K.; Vaupel, J.W. Survival, disabilities in activities of daily living, and physical and cognitive functioning among the oldest-old in China: A cohort study. *Lancet* **2017**, *389*, 1619–1629. [[CrossRef](#)]

52. Milanovic, Z.; Pantelic, S.; Trajkovic, N.; Sporis, G.; Kostic, R.; James, N. Age-related decrease in physical activity and functional fitness among elderly men and women. *Clin. Interv. Aging* **2013**, *8*, 549–556. [[CrossRef](#)]
53. Dorgo, S.; Robinson, K.M.; Bader, J. The effectiveness of a peer-mentored older adult fitness program on perceived physical, mental, and social function. *J. Am. Acad. Nurse Pract.* **2009**, *21*, 116–122. [[CrossRef](#)]
54. Ren, Y.; Li, M. Influence of physical exercise on social anxiety of left-behind children in rural areas in China: The mediator and moderator role of perceived social support. *J. Affect. Disord.* **2020**, *266*, 223–229. [[CrossRef](#)] [[PubMed](#)]
55. Lesser, I.; Fritz, J.-A.; Belanger, L. The Evaluation of a Health-Based Education and Behavioral Change Retreat on Quality of Life, Physical Activity and Psychosocial Health in Adult Cancer Survivors: An Exploratory Analysis. *J. Cancer Educ.* **2020**, 1–8. [[CrossRef](#)] [[PubMed](#)]



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