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Original research

“There's definitely something wrong but we just don't know what it is”: A qualitative study exploring rowers' understanding of low back pain

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ABSTRACT

Objectives: Low back pain is highly prevalent in rowing and can be associated with significant disability and premature retirement. A previous qualitative study in rowers revealed a culture of concealment of pain and injury due to fear of judgement by coaches or teammates. The aim of this study was to explore rowers' perspectives in relation to diagnosis, contributory factors, and management of low back pain.

Design: Qualitative secondary analysis.

Methods: We conducted a secondary analysis of interview data previously collected from 25 rowers (12 in Australia and 13 in Ireland). A reflexive thematic analysis approach was used.

Results: We identified three themes: 1) *Rowers attribute low back pain to structural/physical factors.* Most rowers referred to structural pathologies or physical impairments when asked about their diagnosis. Some participants were reassured if imaging results helped to explain their pain, but others were frustrated if findings on imaging did not correlate with their symptoms. 2) *Rowing is viewed as a risky sport for low back pain.* Risk factors proposed by the rowers were primarily physical and included ergometer training, individual technique, and repetitive loading. 3) *Rowers focus on physical strategies for the management and prevention of low back pain.* In particular, rowers considered stretching and core-strengthening exercise to be important components of treatment.

Conclusions: Rowers' understanding of low back pain was predominantly biomedical and focused on physical impairments. Further education of rowers, coaches and healthcare professionals in relation to the contribution of psychosocial factors may be helpful for rowers experiencing low back pain.

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Practical implications

- Rowers' understanding of the cause and management of LBP is predominantly biomedical and focused on structural pathologies and physical impairments.
- Rowers believe LBP is inevitable in their sport and is associated with risk factors such as ergometer training, individual technique, and repetitive loading.
- The assessment and management of LBP in rowers should be based on a biopsychosocial model.

- Further education of rowers, their coaches and medical teams in relation to psychosocial factors may be helpful for rowers experiencing LBP.

1. Introduction

Low back pain (LBP) is a common musculoskeletal disorder that has been identified as the greatest cause of disability globally.¹ A specific pathological/structural cause of LBP can rarely be identified by clinical tests or imaging, and for most individuals a range of biophysical, psychological and social factors contribute to the experience of pain.² A systematic review exploring the prevalence and risk factors for back pain in

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sports reported a mean point prevalence of 42%, a lifetime prevalence of 63% and 12-month prevalence of 51%.³ In the sport of rowing specifically, an average of 61% of adult rowers have experienced LBP in a 12-month period.⁴ Recognised risk factors for LBP in sports include a previous history of LBP, high training volumes, load increases and exposure time.³ High volume ergometer training, specifically sessions > 30 min is known to increase the risk of rowing-related LBP.⁴ Psychological risk factors including worry and fear related to pain or movement, stress such as selection pressure, and lifestyle considerations such as poor nutrition and sleep have also been identified.⁴ Further research exploring the relationship between stress-related psychological factors and back pain in athletes has been recommended.⁵

The patient voice is an important consideration for evidence-based practice and more qualitative research with sporting populations has been encouraged.^{6,7} Qualitative research is important in the area of athlete health protection to explore the complexity of preventing and managing injury, uncover athletes' beliefs about pain and magnify the athlete voice.⁶ Few qualitative studies have been conducted with athletes on the topic of LBP. The lived experience of LBP in senior competitive rowers has been explored by Wilson et al.⁸ The rowers described a culture of hardiness in the sport, with pain or injury viewed as a weakness. Fear of judgement and exclusion frequently led to concealment of pain from coaches and teammates and a delay in seeking treatment. A minority of rowers reported that openness around LBP and injury was encouraged and this approach was associated with a more positive experience and better outcomes. This study is a secondary analysis of the qualitative data collected by Wilson et al.⁸ We sought to explore a new research question that was identified by the research team who conducted the primary analysis. Peer debriefing conducted in the primary analysis of the data highlighted the need to explore participants' understanding of their diagnosis and/or injury. Gaining an understanding of athletes' experiences and perceptions of injury will help to frame and inform strategies for the prevention and management of injury in this population.⁶ The aim of the study was to explore adult rowers' perspectives in relation to diagnosis, contributory factors, and management of LBP.

2. Methods

This qualitative study is a secondary analysis of previously collected interview data using a thematic analysis approach (further details in Supplementary material, Appendix 1). Ethical approval for the study was granted by the Faculty of Health Sciences Research Ethics Committee (Trinity College Dublin) and the Human Research Ethics Committee (Curtin University approval RDHS-59-16). The original research article has been published and includes a detailed description of the study methods.⁸ In brief, adult senior rowers with a history of LBP were invited to participate in the study through the national rowing governing bodies of Ireland and Western Australia. LBP was defined as 'a pain, ache or discomfort in the low back with or without referral to the buttocks or legs that has been or was present for more than one week and/or interrupted at least one training session'.¹

The 25 rowers (13 females, 12 males) who participated in the study were aged between 18 and 50 years. Twelve participants were based in Australia and 13 in Ireland. The demographic details of the participants are described in Supplementary Table 1. Three researchers experienced in conducting interviews, two in Australia and one in Ireland, conducted

individual, face-to-face interviews. The interviews were semi-structured and followed the schedule outlined in Supplementary Table 2. Interviews lasted an average of 35 min and were audio-recorded and transcribed verbatim. We assigned a code to each participant and all identifiable details were removed from the transcripts to ensure confidentiality. We conducted member checking whereby participants reviewed their transcript and were offered the opportunity to check for accuracy and make amendments. No participant wished to alter the content.

The type of analysis chosen was thematic analysis.⁹ This method of analysis has been promoted as a useful way to explore the perspectives of individual study participants, highlight similarities and differences, and uncover unanticipated insights.¹⁰ Two researchers who were not involved in the original study (MBC and EMG) read and re-read the interview transcripts. MBC and EMG identified and independently coded data segments that related to the research question. The coded data was then organized into themes following discussion with the first author of the original study (FW). We continued to compare and refine the themes until we agreed on the finalised theme names and definitions. A number of methods were employed to enhance the rigour and trustworthiness of the analysis. These included member-checking (performed to ensure accuracy of the interview transcripts during the primary analysis of this data), keeping an audit trail, and taking a collaborative approach to the analysis.

3. Results

We identified three themes: 1) Rowers attribute LBP to structural/physical factors, 2) rowing is viewed as a risky sport for LBP and 3) rowers focus on physical strategies for the management and prevention of LBP. We explain the themes in Table 1 and illustrative quotes are detailed in Table 2.

A range of perspectives were provided by the rowers when they were questioned about what was 'wrong' with their back. Most attributed their LBP to physical impairments, with some referring to specific structural pathologies or radiological diagnoses such as "a problem with my facet joint" or "spondylolisthesis". Others believed that issues with their posture or alignment may have been relevant.

"I've quite a long back compared to my leg length"

[P8]

Pain related to having "pulled a muscle" was commonly reported and several of the rowers referred to lumbar disc and nerve pathology as sources of LBP.

"it was like the disc pressing on it, the root of the nerve"

[P4]

A small number of rowers attributed their pain to degenerative changes in the spine such as "narrowing" and "wear and tear".

Whilst many of the rowers expressed specific beliefs with regard to their diagnosis, others indicated little insight in relation to what was causing their pain.

"There's definitely something wrong but we just don't know what it is"

[P15]

Table 1
Theme definitions.

Theme	Definition
Rowers attribute LBP to structural/physical factors	How the rowers described and understood what was wrong with their back. Their knowledge and understanding of their diagnosis and perspectives in relation to the use of imaging.
Rowing is viewed as a risky sport for LBP	The rowers' perceptions of the risk factors that cause or trigger their LBP. Their awareness of the risk of worsening LBP but willingness to continue rowing despite pain or injury and the belief that LBP is inevitable in rowing.
Rowers focus on physical strategies for the management and prevention of their LBP	The strategies the rowers used to manage LBP and prevent recurrence or further worsening of their pain.

Table 2
Themes and subthemes from analysis of interview transcripts with Senior Rowers, with illustrative quotes.

Primary theme	Sub theme	Participant quotes
Rowers attribute LBP to structural/physical factors	Focus on structural/physical impairments	<p>“Well I think, pursuant to that I think I've got a number of MRIs and all that and there's a bulging disc, or whatever the terminology is. There was a bulging disc and that was touching off a nerve” (P5)</p> <p>“He explained that, you know, that there's a lot of narrowing, a lot of compression and he said it's a back with a lot of wear and tear” (P8)</p> <p>“There's a problem with my facet joint and what's worrying is that it's the exact same injury that I had last year” (P10)</p>
	Lack of knowledge related to cause and complexity of LBP	<p>“What is it? the vertebrae in the back? And the disc-ey fluid or whatever, right. I'd said that there was a bit of a tear there and some of that was, you know, had poked out if you like, and that was touching a nerve and that nerve that was sending pain” (P5)</p> <p>“I don't know. I was frustrated because I was like there's definitely something wrong but we just don't know what it is” (P15)</p> <p>“So I didn't really understand you know ... Is a slight bulge ... You know how bad is a slight bulge? Or how bad is a big bulge? Um, so I didn't, I don't think at the time I understood the, you know, the severity of my...what had happened” (P20)</p>
	Conflicting views on the value of imaging	<p>“I'm not sure it really helped me with the MRI really because I have a slight bulging disc in the low or two slight bulging. Not really bad but what I've learned afterwards it's like you can have no disc and have no problem and you can have a perfectly healthy disc and you can have heaps of problems.” (P2)</p> <p>“They never actually knew. I had an MRI and well, because my family has like a bit of history with back pain, like my sister and my dad had bulged discs so we thought maybe that would be it. But there was nothing showing on the MRI” (P15)</p> <p>“It was nice to know that there was actually ... I wasn't making it up. Like there was actually something not quite ... You know, something that was affecting how I could move.” (P18)</p>
Rowing is viewed as a risky sport for LBP	Pain inevitable in the sport of rowing	<p>“I suppose I've grown up with a culture of rowing where, like, everybody has an injury.” (P2)</p> <p>“It's almost just considered something that happens to rowers. It's almost considered just... rowers, especially older rowers, have bad back and generally that's the first thing that stops you from rowing” (P16)</p> <p>“You're doing the same continuous movement, repetitive movement. You've got quite a lot of load” (P23)</p>
	Continuing to row despite pain	<p>“I know it's a stupid mentality because we are maniacs, rowers. So we're all a bit overzealous. So I never said. I didn't say anything. But I'm angry now because of the damage that's done.” (P8)</p> <p>“I kept training on it for maybe two or three weeks and maybe I pushed it further and further into the red and then... yeah I probably just did damage to it that way.” (P10)</p> <p>I got through it I mean I managed it and rowed the championships and that was ehm you know it was fine but then about two weeks after that I had a I started to get a pain down my hamstring and ehm it just progressed never went away and then it just got worse and worse and worse and to the point where ehm I was in awful pain” (P11)</p>
	Ergometer training	<p>“You know what are your triggers, okay, because athletes really, really know their bodies so you know your triggers.” (P1)</p> <p>“It wasn't as bad when I was on the water. It was more the erg sessions. So once we started training like all the time on the water I was okay.” (P4)</p> <p>“That year I was kind of working quite long hours but I was doing a lot of rowing machine in my own time and I think that might have contributed to the pain” (P11)</p>
	Issues with rowing technique	<p>“I start using arms more, and I like, like I sit up less on my glutes and things. Just cause like my back would be sore and I'd be trying to compensate for it.” (P6)</p> <p>“I think pressure or force becomes a problem when it's ... If you ... You're not strong enough to hold your body positions for a long period of time.” (P18)</p> <p>“With so much training I feel like I might have just, uh, got tired obviously and then, um, the technique sort of dropped a little” (P25)</p>
	Training volume	<p>“You're constantly told that the volume that you do is you know equals your outcome ehm and the sheer amount of volume that is required I think really doesn't give you much chance for recovery.” (P9)</p> <p>“No one's going to get through a sport with as high a volume like you know you're doing 250 k a week weights, erg, water your know no one's going to get through that without an injury” (P13)</p> <p>“To row properly you have to be doing big K's and big volumes” (P17)</p> <p>“If I do something different into my routine, or I don't do my core, or not my core, my sit ups and various prevention pieces around it flares up, and that's very acute.” (P1)</p>
	Weak core	<p>“Well I suppose if your core isn't strong enough you're going to put more pressure on your back so that's a serious problem” (P3)</p> <p>“It was a combination of I don't have a very strong core, and so when I'm sitting up in the boat I think I was probably, the muscles in my back were tightening a lot as well to protect” (P4)</p> <p>“I have a friend who was forced to stop the sport because of the way he was rowing. He did damage to his back. But... He had a particularly bad core so he used to be quite slouchy in the boat. I presume that maybe, you know, contributed to the fact that he had to stop.” (P7)</p> <p>“I think stretching is, and warm-up and warming-down correctly, is really important” (P7)</p> <p>“But I think in general it's back care. It's warming-up properly. Proper flexibility. Core training. That has to be an integral part of, of your training.” (P8)</p> <p>“If my back was sore, I knew what exercises or what stretches I needed to do for the next week, and like what I can do to avoid that” (P19)</p>
		Importance of core strengthening
Rowers focus on physical strategies for the management and prevention of their LBP	Exercise important for managing and preventing pain	<p>“I think stretching is, and warm-up and warming-down correctly, is really important” (P7)</p> <p>“But I think in general it's back care. It's warming-up properly. Proper flexibility. Core training. That has to be an integral part of, of your training.” (P8)</p> <p>“If my back was sore, I knew what exercises or what stretches I needed to do for the next week, and like what I can do to avoid that” (P19)</p>

(continued on next page)

Table 2 (continued)

Primary theme	Sub theme	Participant quotes
	Altering movement patterns to avoid pain	<p>"I always bend at my knees because I am worried that flexing over it's going to hurt, umm. I don't do a lot of running, I am worried that I will flare it up ... I avoid sitting for long periods ... what else do I do. Ummm... I don't do sit ups... because I worry that it will flare". (P14)</p> <p>"Maybe it's just a conception that I would be doing further risk, you know, it was in my mind that's how I damaged it so I'd be more likely to damage again if I was living heavy things." (P16)</p> <p>"One of the ones that I found helped a lot, is thinking about pushing through my heels. Cause you sit on your toes a lot when you row, and that sort of stuff, but I find if I think about pushing through with my heels, I can make sure I'm loading up my legs more than my back". (P22)</p>

The terminology and language used by some of the athletes may indicate low levels of health literacy or a lack of knowledge in relation to the complexity of LBP.

"the disc-ey fluid or whatever, right. I'd said that there was a bit of a tear there and some of that was, you know, had poked out if you like, and that was touching a nerve"

[P5]

Most of the rowers reported undergoing imaging of their spine but different opinions were offered in relation to the value of imaging. Some individuals felt reassured when the findings of their MRI helped to explain their symptoms.

"it was nice to know that there was actually ... I wasn't making it up. Like there was actually something not quite... you know something that was affecting how I could move"

[P18]

Some discussed how the results of their MRI had informed further treatment.

"I had went for an MRI after a number of months and they discovered I had a severe protrusion on my L5/S1 disk so I was taking kind of anti-inflammatories and stuff like that to kind of nurse it and then I went for an operation"

[P11]

Other participants were disheartened when MRI findings did not seem to correlate with their pain or "there was nothing showing on the MRI".

Rowers' perspectives in relation to their LBP diagnosis seemed to be influenced by healthcare professionals, with some receiving mixed messages from different clinicians.

"I had a bad habit of, one of my physios described it as 'kicking my pelvis out of alignment' just with sort of the unevenness of sweep rowing. Although another physio then said to me 'you actually can't kick your pelvis out of alignment', so there's some debate to that."

[P9]

LBP was generally viewed to be inevitable and "almost expected" in the sport of rowing. There was a sense of acceptance that risk of injury and discomfort were part of rowing at an elite level and participants considered pushing through pain to be part of the culture and attitude to injury in rowing.

"I was aware when I was rowing that I could feel the back wasn't quite right, that I could, I felt like I could row through it and then it would be after the session where I pushed it too far"

[P16]

A range of potential triggers of pain were described by the participants. Ergometer training was identified as a factor that may provoke or worsen pain, but this type of training was considered essential to ensure team selection for competition.

"I think on the ergo, you're ... You are under more stress ... Under more pressure because your number is right there"

[P18]

The rowers also attributed their LBP to problems with rowing technique and they described how issues with position in the boat, recruitment of muscle groups and the sequencing of their technique could overload their back.

"with so much training I feel like I might have just, uh, got tired obviously and then, the technique sort of dropped a little"

[P25]

Many referred to the nature of the sport of rowing and how high volumes of repetitive, loaded motion and imbalance associated with sweep rowing contributed to the development or worsening of their LBP.

"You're doing the same continuous movement, repetitive movement. You've got quite a lot of load"

[P23]

Several of the participants identified core weakness as a risk for LBP.

"Well I suppose if your core isn't strong enough you're going to put more pressure on your back so that's a serious problem"

[P3]

"it was a combination of I don't have a very strong core, and so when I'm sitting up in the boat I think I was probably, the muscles in my back were tightening a lot as well to protect"

[P4]

In many cases, the participants' belief that core weakness was a factor in contributing to their LBP appeared to be influenced by healthcare professionals.

"there's been advice just to strengthen the core. Lots of sit ups and that type of core strengthening work. Uh, stretching hamstrings. I'll probably think of more. I think over the course of the last seven or eight years I've probably, for the back, I've probably seen maybe four or five different physios"

[P16]

A small number of rowers referred to fatigue and stress as contributory factors for flare-ups of LBP.

"I can't predict them [flare-ups], but I know that looking back on it, if I go through periods of just not doing any exercise at all, I am not, just doing gentle stretching, or I am not keeping up with the gentle heat, like if I get tired or stressed, I know that they do come up"

[P14]

Despite demonstrating some awareness of the triggers of LBP in rowing, the participants placed more importance on meeting training demands than on reducing the risk of pain or injury.

“you’re constantly told that the volume that you do is you know equals your outcome”

[P9]

Rowers favoured active, physical strategies for the management and prevention of LBP. However, their treatment approaches were predominantly focused on physical factors. Stretching was believed to be important to maintain flexibility and prevent LBP. Strengthening of core or gluteal muscles was considered by most to be an essential component in the treatment of rowing-related LBP and for prevention of recurrence.

“I try to do things like to strengthen my back. I do a lot of core exercise and stuff. And like I think it’s helped a bit, because I’ve noticed like I’m not as bad as I was”

[P6]

The importance of core-strengthening appeared to have been emphasised by coaches and healthcare professionals.

“My coaches have always said to do a lot of core work. It’s really important to do a lot of core work, and then we don’t really. Around back pain it’s always been whenever I’ve had, whenever I’ve seen anyone to do with back pain they always say work on your core”

[P2]

When questioned about the rationale behind core strengthening, there appeared to be a belief that strong musculature would protect the spine from excessive load.

“I think it just gives it support so that the spine isn’t the major system transmitting the force so hopefully there’s some strong musculature supporting it and taking some of the load off”

[P2]

There was also a perception that working on core would improve rowing technique.

“more emphasis on core, sitting up like posture is a big part of the new technique”

[P25]

Only one of the rowers acknowledged the need to consider lifestyle factors such as nutrition and sleep, in addition to strength and conditioning work.

“you need to do enough S&C and balancing exercises as possible and then be on that food and sleep”

[P9]

A sense of fear was apparent in the language used by some of the rowers who spoke about altering everyday movement patterns, in an effort to prevent flare-ups of LBP.

“I always bend at my knees because I am worried that flexing over it’s going to hurt. I don’t do a lot of running. I am worried that I will flare it up ... I avoid sitting for long periods. I don’t do sit ups... because I worry that it will flare”

[P14]

These beliefs appear to have been reinforced by healthcare professionals.

“I wanted to know what was wrong with my back and the result was a sports doctor told me I had the back of a 60 year old and that I sort of needed to be very careful with everything that I did from sort of that point forward”

[P16]

However, these avoidant behaviours were at odds with the rowers’ otherwise active approach to the management of LBP.

4. Discussion

This study aimed to explore rowers’ perspectives in relation to diagnosis, contributory factors, and management of LBP. In general, the participants attributed their LBP to structural or physical impairments, and they viewed rowing to be a risky sport for LBP. The strategies proposed by the rowers for the management and prevention of LBP were predominantly based on physical factors.

Participants generally appeared to make sense of their pain through a biomedical model and most believed that their LBP related to structural pathology or physical impairments. The views expressed by the rowers are not uncommon and similar biomedical beliefs have been reported in qualitative studies with non-athletes¹¹ and health professionals.¹² However, these traditional biomedical beliefs are not in keeping with the current understanding of LBP as a biopsychosocial phenomenon.¹³ Only 5–10% of cases of disabling LBP are associated with specific pathoanatomical issues such as disc prolapse, neurological compromise or cauda equina syndrome¹⁴ and most cases of LBP are referred to as non-specific.¹⁵ It has been suggested that limiting the focus of treatment to structural sources of LBP is unlikely to be helpful for athletes and optimal management should be based on a biopsychosocial model.¹⁶ In many cases, rowers’ views were informed by coaches and medical professionals. Coaches are central figures in sporting environments and have pivotal roles in the prevention of injury.¹⁷ The impact of coaches’ behaviour and approach on rates of injury in athletes has been demonstrated^{18,19} with lower rates of injury among athletes associated with coaches who exhibit a transformational leadership style.¹⁹ Higher injury burden and incidence of severe injury have been found to be associated with low quality of communication between the coach and medical team.¹⁸ Athletes should be provided with a clear explanation of their LBP diagnosis in a manner that is tailored to their level of health literacy. Further exploration of why rowers hold biomedical beliefs in relation to LBP, and the information that they are receiving from their coaches and medical team is an area for future research.

Most of the rowers referred to findings on diagnostic imaging when discussing what was ‘wrong’ with their back. Whilst some participants perceived MRI to be helpful in identifying the source of their pain, others were frustrated by a lack of correlation between their symptoms and imaging results. Current clinical guidelines discourage the use of routine imaging for non-traumatic LBP in the absence of radiculopathy or neurological deficits.²⁰ MRI findings such as disc degeneration and vertebral endplate changes are prevalent in asymptomatic individuals²¹ and routine use of MRI in LBP has been found to produce a negative perception about the back, and is associated with poor functional outcomes.²² Imaging should be used judiciously in both the general and sporting populations and should be clearly explained using clear, non-threatening language that makes sense to the patient.^{4,16}

There was a perception among participants that LBP is inevitable in rowing. The high prevalence of LBP reported in rowing³ may contribute to this perception. However, this belief may be unhelpful if it leads to a sense of fatalism and prevents rowers from taking proactive approaches to prevent LBP. The athletes’ perceptions of pain and injury as inevitable do not reflect the World Rowing policy on safeguarding participants in rowing, which outlines the requirement to protect athletes from non-accidental injury.²³ The nature of the sport of rowing and specifically the use of ergometers, problems with rowing technique and high training volumes were recognised by the rowers as risk factors for LBP. These factors are consistent with those reported in the rowing literature.⁴ However, whilst physical risk factors were identified, most of the participants in this study did not discuss the impact of psychosocial factors for LBP e.g. stress and disrupted sleep. A small number of the participants linked these factors as contributory to LBP. Clinical guidelines recommend a broad biopsychosocial approach for the management of LBP in athletes¹⁶ and the 2021 consensus statement for the management and prevention of LBP in rowers highlights the importance of psychological factors such as stress and selection pressure, and lifestyle factors

including poor nutrition and sleep.⁴ Rowers and their coaches and medical teams should be educated about the significance of psychological and lifestyle factors for their general health and well-being, and for the management and prevention of LBP and injury.

The rowers employed an active approach to manage and prevent LBP, and most continued to row despite experiencing LBP. The treatment approaches that they discussed were predominantly based on exercise. Exercise and physical activity are promoted for LBP,²⁴ but few clinical trials have been conducted with athletic populations. Whilst continuing to train and compete at a high level may risk worsening LBP, recent evidence recommends against completely removing an injured athlete from training as this has been shown to be predictive of injury recurrence.²⁵ Instead, athletes should modify their activity and training approach⁴ and continue their sporting activities, despite the presence of some level of pain.²⁶

Although it is encouraging that the rowers perceived exercise to be helpful for LBP, some of the beliefs expressed are not in line with current evidence. The athletes described specific types of exercises such as stretches and core-strengthening as being important for LBP management and prevention. However, evidence suggests that core-strengthening or stabilization exercises may be less effective than other types of exercise, such as pilates or McKenzie exercise for the management of chronic LBP in adults.²⁷ There is a lack of research examining specific exercise interventions in adult rowers, although targeting trunk and leg strength and endurance as part of a cognitive functional approach in adolescent rowers was associated with clinical improvement in LBP.²⁸ Person-centred care involving a multidimensional approach that also includes trunk conditioning is appropriate²⁹ but further research is needed to determine specific modalities. Furthermore, some of the rowers reported being advised by coaches and/or the medical team that core-strengthening exercises were necessary for protection of the spine and others described unhelpful behaviours in relation to everyday activities such as bending and sitting with a straight back. This advice and behaviour are unfounded and unhelpful. Healthcare professionals treating athletes with LBP should avoid promoting rehabilitative exercises on the basis of correcting vulnerability. Instead exercise should be encouraged as a means of building body confidence, and enhancing mental and physical resilience.²⁶ Non-physical factors, such as stress, sleep, and fear of pain and movement, are also important to be considered and addressed accordingly to optimise recovery.⁴

The limitations identified by Wilson et al.⁸ in relation to the original qualitative study also apply here. In addition, it is a limitation that participants were not asked specific questions related to the influence of psychosocial and lifestyle factors on LBP. Further limitations are common to any secondary data analysis. These include conducting research with a specific purpose using data that were collected for another purpose and not being able to conduct further interviews to clarify or validate thematic findings.³⁰ Notwithstanding these limitations, the availability of this rich dataset presented a unique opportunity to explore individuals' understanding of LBP, a topic which is poorly understood, particularly in athletic populations.

5. Conclusion

Rowers in this study generally made sense of their pain through a biomedical model and they focused predominantly on structural/physical impairments. Clinicians and professionals working with rowers should take a biopsychosocial approach to the assessment and management of LBP. Athletes' beliefs and knowledge about LBP should be explored, and education provided using evidence-based health messages that raise awareness of the relevance of psychosocial risk factors for LBP.

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Declaration of interest statement

None declared.

Confirmation of ethical compliance

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jsams.2022.05.001>.

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