

## AAOMPT Opposes Use of the Term “Degenerative Disc Disease”

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## EXECUTIVE SUMMARY

“Degenerative disc disease” is a commonly used term to diagnose an age-related condition that occurs when one or more of the discs between the vertebrae of the spinal column change in shape and size. Rates of imaging for musculoskeletal pain have increased with improved access to advanced technology. The observed anatomical changes seen on imaging studies have long been incorrectly associated with a diagnosis of the pain-generating tissue. Emerging evidence indicates that many of these observed anatomical changes are instead reflective of the natural aging process. Furthermore, recent evidence highlights the potential negative impact these diagnostic labels can have on patient outcomes. Relying on diagnostic anatomical labels to describe natural age-related changes, to guide interventions, and to inform activity recommendations can adversely affect patient outcomes. This report examines the use of the term “degenerative disc disease” to describe a commonly occurring aging process and the impact it has on patients and providers. It also affirms that the first line treatment options recommended by most clinical practice guidelines can be effectively delivered by physical therapists.<sup>1</sup>

## INTRODUCTION

Low back pain and neck pain commonly occur in adults. Over 90% of the population will experience back pain of some kind at a point in their lives.<sup>2,3</sup> This pain usually goes away within an expected time frame. However, there are some instances when the pain is intense, or may last longer than expected. In these scenarios, people enter the healthcare system seeking answers as to why their neck or back continues to hurt. Both patients and providers consider imaging as a way to validate the pain as a legitimate complaint. The need to identify the pain-generating tissue is common thinking for patients in America’s model of healthcare. However, musculoskeletal pain is complex and the pain experience is influenced by many factors. These factors include sex,<sup>4</sup> ethnicity,<sup>5,6</sup> genetics,<sup>7</sup> obesity,<sup>8,9</sup> sleep,<sup>10,11,12,13</sup> stress,<sup>14,15</sup> depression,<sup>14,16</sup> anxiety<sup>17,14,16</sup> to name a few. It is important to remember that pain is not simply related to tissue pathology. Pain is multifactorial and reflective of emotional, physical, and psychological

changes that may occur prior to or after an injury.<sup>18,19,20,15,21</sup> Thus, early and appropriate care is paramount in the management of new onset musculoskeletal pain.

However, pain can also persist for extended periods of time. When this happens, it may interfere with day-to-day activities or cause worry. Chronic musculoskeletal pain, lasting more than three months, impacts more than 100 million Americans - approximately one in three people.<sup>22</sup> More people have chronic pain than the combined number of people suffering from heart disease, cancer, and diabetes.<sup>22</sup> The annual economic costs exceed \$600 billion dollars.<sup>23</sup> This means that chronic musculoskeletal pain, while detrimental to quality of life, is significantly contributing to the ever growing healthcare costs even though it is not a fatal diagnosis or a life-threatening pathology. Many of these costs are related to imaging studies,<sup>24</sup> pharmaceuticals,<sup>25</sup> or high-risk interventions.<sup>26</sup>

Many diagnostic procedures for musculoskeletal pain contribute to increased healthcare expenditure, with diagnostic imaging being a frequently used technology. Both patients and providers use imaging to guide decisions related to intervention. However, emerging evidence highlights the potential negative impact that diagnostic labels used to describe imaging findings can have on patient outcomes.<sup>27,28</sup> This is due to the fact that pathoanatomical findings on imaging may be minimally related to the persistent pain complaints. Therefore, there is growing awareness that the use of anatomical diagnostic labels for common age-related findings seen on imaging may adversely affect patient outcomes.

The purpose of this paper is to demonstrate to providers and patients that the term “degenerative disc disease” is outdated based on current evidence. This paper aligns with recommendations by radiologists, who state that “degenerative disc disease,” out of context with clinical presentation, can result in unnecessary intervention or adverse outcomes for patients.<sup>29</sup> Further, this white paper posits that the continued use of “degenerative disc disease” is detrimental to patient outcomes and minimizes the value of non-invasive or conservative intervention strategies.

### **Degenerative changes are natural and commonly found in people without pain**

Diagnostic imaging is presumed to identify the specific damaged tissue(s) responsible for pain experienced. However, disc degeneration occurs commonly as part of the aging process.<sup>30,31,32 33</sup> Disc degeneration is frequently found on diagnostic imaging in asymptomatic populations.<sup>30,34</sup> Changes have also been found in people who are in their 20's.<sup>29</sup> More changes are more common in people as they age: Consider that 37% of asymptomatic subjects in their 20's demonstrate age-related disc changes and that this number jumps to 96% in 80-year-old subjects.<sup>30</sup>

When pain is present, disc degenerative changes found on imaging are not well correlated to the clinical presentation.<sup>35,36,37,38</sup> Further, these findings are not predictive of future episodes of low back pain. A recent 10-year longitudinal study found no correlation with disc degenerative changes and future episodes of low back pain.<sup>39</sup>

However, a systematic review and meta-analysis did find that disc degeneration was more common in adults younger than 50 with low back pain than in individuals without low back pain.<sup>40</sup> This likely reflects the incredible accuracy of diagnostic imaging to identify irregularities. For example, early degenerative changes to discs have been found in people without pain, while more advanced levels of disc degeneration tends to occur at the same levels where concordant symptoms could be reproduced.<sup>41,42</sup> What is important to remember is that these imaging findings persist even as symptoms resolve.<sup>43</sup>

With regard to imaging, professional guidelines should be implemented to direct decision-making and protect patients. Diagnostic imaging in non-specific low back pain **is not indicated**.<sup>44,45,46</sup> Fritz et al. identified healthcare costs to be \$4,793 higher for patients referred for advanced imaging instead of seeing a physical therapist after a primary care consultation due to low back pain.<sup>47</sup> Despite this, degenerative disc disease is the most common low back pain pathology leading to *further* advanced

imaging.<sup>48</sup> Diagnostic imaging for degenerative disc disease and non-specific low back pain remains overutilized<sup>49,50</sup> and contribute to an increased use in medical services such as injections and surgical interventions.<sup>51,52,53</sup> Imaging for degenerative disc disease occurring outside of best practice guidelines is correlated with reductions in return to work and decreased patient satisfaction.<sup>51,52,53</sup>

To be clear, radiographs or advanced imaging are indicated in several instances. For example, after low-velocity trauma, blunt force trauma, in patients with osteoporosis,<sup>46</sup> or in patients that may otherwise be at risk for vertebral compression fracture.<sup>54</sup> Imaging is also appropriate in patients over the age of 50 who have a prior history of cancer or if there is concern for infection or metastatic involvement.<sup>46,55,56</sup> Advanced imaging is appropriate for progressing symptoms, for cases which may be managed surgically, or in cases of cauda equina syndrome.<sup>46</sup> However, these cases make up a collective minority of all back pain presentations.

To summarize, the term degenerative disc disease is outdated and does not adequately capture the pain experience. Imaging does not change management.<sup>50,57</sup> Indeed, only one in 2500 radiographic images have been shown to make a significant change to the course of care in patients under 50 years of age.<sup>58</sup> Best practice clinical guidelines recommend low risk, minimally invasive strategies as the first step in managing back pain.<sup>59</sup>

### **Lower risk strategies should be implemented first**

Physical therapists play a critical role in society by helping to restore function, improve quality of life and reduce the disease burden present in America today. These professionals provide value to our healthcare system as cost-effective, front-line providers for musculoskeletal pain. As the United States continues to suffer from excessive healthcare spending and a devastating opioid epidemic, we should consider the expanded role a physical therapist can play in managing low back pain.

A Gallup poll found that Americans would rather try other ways to manage musculoskeletal pain than use pain medications.<sup>60</sup> Yet, 31% have not tried any

alternative therapies before going on to become chronic opioid users according to a poll conducted by Washington post in collaboration with the Kaiser health system published in 2016.<sup>61</sup> In fact, over the past 20 years, prescriptions for opioid medication to manage low back pain have increased by 45%.<sup>62</sup> An emerging body of observational and retrospective evidence consistently demonstrates that when patients seeking medical care for musculoskeletal pain interact with a physical therapist first, in a timely manner, and before being prescribed opioids, healthcare costs are reduced and patient outcomes improve.<sup>59,63</sup> Further, when patients with low back pain see a physical therapist first, they have an 89.4% lower probability of having an opioid prescription up to one year later compared to patients who never saw a physical therapist or who saw a physical therapist late.<sup>63</sup>

While the benefits of physical therapy care in the presence of musculoskeletal pain are well established utilization rates are still low. Referral rates can be found as low as 7-10% for patients with low back pain seeking care.<sup>64,62</sup> Lower referral rates to physical therapy have been associated with greater odds of receiving an opioid prescription.<sup>62</sup> In a large cohort of over 216,000 patients with a new onset of low back pain seen during a five-year period across the USA, 22% received opioids within the first 30 days. Only 1.6% of all the patients in this same cohort saw a physical therapist as their initial-care provider. The patients that did see a PT as their initial care provider had significantly decreased odds of long-term opioid use.<sup>65</sup> One reason for this may be due to the pervasive emphasis on a tissue “disease” that both providers and patients then consider need “fixing” with a higher-risk intervention.

### **Words Matter**

When pain is intense, or when pain does not resolve as expected, patients seek medical care to find answers that can explain their pain. Often, this is based on the assumption that they have injured or damaged the structures in their back.<sup>27</sup> They are curious to know the reason for their pain, how to manage it, and how to prevent it.<sup>27,66</sup> When patients have pain for a long time, they also seek confirmation and validation that they have a legitimate medical problem.<sup>27</sup> Without imaging, or “proof” of their pain,

patients report difficulty communicating with their providers<sup>67,68,69</sup> about the gravity of their complaint.

As such, patients value diagnostic imaging as it they believe it can provide validation that the pain they are experiencing is real<sup>27</sup> or provide peace of mind by ruling out feared diseases such as cancer. However, imaging cannot always identify the source of pain.<sup>70</sup> Pain is an adaptive experience.<sup>71</sup> This means that pain is a natural phenomenon influenced by biological, psychosocial, and cultural factors that cannot be condensed to imaging findings alone.<sup>70</sup> Thus, the pain experience is not directly coupled to only damage of the tissues.<sup>70,72</sup> This makes pain an invisible reality for many patients.<sup>73,74</sup>

Imaging is a diagnostic tool and the purpose of diagnosis is to guide intervention options. Considering the pain experience based solely on imaging findings supports a biomedical model of pain, in which management strategies are primarily driven by pharmacological and procedure-based interventions. While pathoanatomy is one factor to consider, there are many other variables that may predict the development and maintenance of pain including dysfunctional sleep<sup>10,11,12,13</sup> compromised physical and emotional health,<sup>14,15,16</sup> and societal influences.<sup>75</sup> Pain is defined as “an aversive sensory and emotional experience typically caused by, or resembling that caused by, actual or potential tissue injury.”<sup>71</sup> In other words, pain is a “warning light” for the systems of the body, alerting when tissue injury is occurring, or when the body’s resilience to tolerate tissue loading is impaired due to musculoskeletal impairment and/or suboptimal engagement with health behaviors related to sleep, physical, and emotional health. Therefore, clinicians and patients should also seek other clinically relevant screening tools, such as the PainDetect,<sup>76</sup> monitoring for sleep,<sup>77</sup> and emotional health,<sup>78</sup> relevant physical health testing such as blood pressure,<sup>79</sup> and/or quantitative sensory testing.<sup>80</sup> These measures may provide more insight into the reasons behind the development and persistence of pain.

The clinical conversation of pain is now being recognized as a key factor<sup>27,81</sup> in pain management strategies, patient outcomes, and future health seeking behavior.<sup>82,83</sup> The

clinical conversation about pain is a social exchange of information.<sup>83</sup> Healthcare providers' beliefs strongly influence patients' beliefs.<sup>66</sup> Thus, if a physician, nurse practitioner, or physical therapist strongly believes in the biomedical model, then the patient will also likely adopt this model.<sup>84</sup> This limits potentially beneficial management options. Similarly, medical language used in a biomedical model can be negatively interpreted by patients.<sup>85</sup> Phrases that are commonly used by healthcare providers to describe low back pain can often be interpreted as catastrophic findings by patients.<sup>85</sup> This may contribute to avoidance of physical activity, a well-supported intervention for low back pain and overall health, due to fear of further harm.<sup>28</sup>

Healthcare providers may use the phrase “degenerative disc disease” and explain these findings as the tissues being “worn out.”<sup>85,28</sup> Providers could mean to imply that such findings are incidental or expected; however, patients may interpret these explanations to mean that any further mechanical stress on the spine will lead to further degeneration and damage. Similarly, when the explanation for the patient's pain is attributed to the pathoanatomical structures, expectations for management change, as an underlying concern for “fixing” those structures may be implicitly or explicitly woven into the clinical conversation.<sup>85</sup> Patients may also associate these phrases with the expectation of high levels of disabling pain.<sup>28</sup> Thus, treatment outcomes may suffer when there is a disconnect between the healthcare provider's' language and a patient's expectations.

### **Recommendations for communication strategies**

If pain is an adaptive experience, then the tissue-related findings are also an adaptive experience. AAOMPT does not endorse not using the term “degenerative disc disease” as it perpetuates a biomedical model of pain that drives both providers and patients to seek more invasive, higher-risk interventions. Simply staying active and listening to an encouraging prognosis can be helpful for most patients.



## **I. Recommendations for providers' communication**

- a. Reframe the patient's understanding of the term "degenerative."  
\*The bones are not deteriorating, a common perception of patients.  
Pathoanatomical changes on imaging represent the body's attempt at adaptation to improve tolerance to loading
- b. Reframe patient expectations for improvement. A tissue described as "worn out" does not sound like something that can get better.
  1. Reassure patients that symptoms can improve despite the findings on imaging.
  2. The tissues do not to be "fixed," but instead given the opportunity to properly adapt to the demands being placed on them.
- c. Refrain from using the term "disease." Pathoanatomical changes are a clinical finding, but not a confirmation of a disease process.
- d. Emphasize in the absence of sinister pathology, these adaptive changes are only part of the story.
  1. The adaptive changes on imaging occurred as in response to the patient's overall life experience.
  2. The entirety of the patient presentation, including musculoskeletal impairment, sleep, physical health, and emotional health, needs to be considered when making recommendations.

## **II. Recommendations for providers should align with clinical practice guidelines for interventions.** These recommendations should include:

- a. In the absence of red flags, providers' assurance that the favorable prognosis and resiliency of the spine should not stop patients from being active and having a positive attitude.
- b. A tiered-approach to increasing activity, flexibility, strength, and mobility.<sup>1</sup>
- c. An implicit and explicit support shared with patients regarding the value of low-risk, conservative options.
- d. Projected confidence in low-risk, conservative options to foster patient buy-in.

1. Avoid implicit biases such as: “Well, just try increasing your activity, flexibility, and mobility first, and we will do surgery if that does not work.” This already sets an expectation for low-risk management options not to work.
2. Patients should be given advice and education that in the absence of red flags, low back pain is primarily self-limiting with a good prognosis. Patients should be empowered to stay active and make healthy life choices to aide in the recovery process.
  - a. Promotion of health behaviors related to nutrition, physical activity, emotional health, and sleep.

### **III. Recommendations for patient understanding**

- a. Findings on imaging represent adaptive changes. This is the body’s internal response to external forces.
  1. Muscles that are exercised grow larger and stronger.
  2. Bones that are loaded become stronger and more resilient (e.g. preventing osteopenia/osteoporosis).
- b. Training has to start at a level appropriate for the patient.
  1. If you are training for a marathon, you don’t start running 26.2 miles on day #1. You slowly build up to allow the musculoskeletal, cardiovascular, and nervous systems the time adapt to the demands required.
  2. An injured athlete does not just jump back into sport. They gradually build back up to return-to-play for the same reasons.
  3. The same is true of low back pain, over time and with proper training, the body will also adapt to the demands of everyday life. If these systems have become deconditioned due to lack of exercise or sedentary behavior, it is important to return to exercise and physical activity at the proper levels.
- c. The body best responds to training when you have proper sleep, optimal nutrition, and strategies to help manage stress. Much like athletes training for an event or returning from injury, there is a heavy

focus on appropriate rest/recovery, eating well, and preventing emotional burnout to increase their success.

## **Recommendations to manage low back pain**

Pain is an adaptive and a typically short duration phenomenon functioning as warning system that works properly. Remember that back pain will affect 90% of adults at some time in their lives.<sup>2,3</sup> Non-pharmacological and non-invasive conservative interventions that are backed by evidence are recommended as initial treatment strategies. When the pain experience extends beyond expectations, it is often referred to as chronic pain. The American College of Physicians Clinical Practice Guidelines for low back pain summarize more than 150 research studies related to acute and chronic low back pain.<sup>1</sup> Strong recommendations are given for chronic low back pain that integrate multi-disciplinary rehabilitation, including exercise, manual therapy, mindfulness, and cognitive behavioral therapy.<sup>1</sup> Only after high quality non-invasive interventions have failed are pharmacological interventions recommended.

Physical activity can decrease pain levels for patients with chronic low back pain.<sup>86</sup> Exercise is one mechanism by which a person can activate an “internal pharmacy” to help decrease pain. Further, recent evidence indicates that exercise can reverse the processes associated with the pain processing systems in chronic low back pain.<sup>87</sup> Exercise is the recommended front-line intervention in the management of low back pain, according to the Academy of Orthopaedic Physical Therapy.<sup>88</sup> Simple activities such as walking have demonstrated equal outcomes across interventions for chronic low back pain resulting in reduced pain and improved function across multiple studies.<sup>89</sup> Staying physical active is a way to *prevent* the development of chronic low back pain.<sup>87</sup>

## Case Example:

A 53-year-old male experiences new onset acute low back pain with no previous history of cancer, tobacco use, or risk of familial cancer diagnoses. He has concurrent hypertension and a body mass index of 35.4. He reports no established exercise routine, poor eating habits, insomnia, and experiences regular bouts of depression. The patient's father also suffered from chronic low back pain, and he notes that his father "wore out his back" working construction for many years. This patient also is a manual laborer, and worries his low back pain is attributed to the "wear and tear" of his job, just like his father.

Ideally, this patient seeks early consultation from a primary care provider for musculoskeletal pain instead of allowing symptoms to progress to a point where they become even more unbearable. Depending on state practice acts, this can include professionals such as physicians, nurse practitioners, chiropractors, or physical therapists. Multiple studies have demonstrated that early consultation and subsequent conservative management not only reduces the incidence of chronic pain, but also reduces the incidence of additional medical procedures, imaging studies, and opioid use. However, even if pain becomes persistent, conservative management can significantly improve quality of life, and therefore it is important for the patient to seek consultation with a skilled provider in musculoskeletal care whenever pain does not improve.

In a traditional biomedical model, this patient, given his age and occupation, may be told his symptoms are due to overuse. Terms such as "arthritis", "tear", or "microtrauma" may be used to describe presence of "degenerative disc disease."

Recommendations may include non-steroidal anti-inflammatory medications, muscle relaxers, other pain medications, heat, and gentle stretching. The patient may also be told to "take it easy" due to the structural changes in the low back, that he will need to be careful about "over doing it" as to not damage those structures any further, and once the symptoms progress to being intolerable, he will need surgery to "stabilize" the structures in his low back.

The above scenario attributes the patient's pain exclusively to the structures of the low back. It sets the expectation that the pain will continue to progress, that eventually something needs to be done to "fix" the problematic structures, and that there is little hope improvement; it is just something he will have to live with.

Conversely, it is the position of this paper that the patient should have a completely different experience during the provider-patient interaction. The practitioner should discuss all of the findings with the patient in a way that is non-threatening. The

prognosis, which is most likely very good, should be explained to the patient to allay any unwarranted fears. Clinical practice guidelines do not recommend imaging in this case example. However, if imaging was already performed, structural changes were identified, and the patient was told they had degenerative disc disease, the patient should be educated as to why there is really no disease or true degeneration and why he should not be worried about it. These findings should be contextualized as evidence of those tissues already trying to adapt. While repeated exposure to his work demands may have contributed to the structures of his low back becoming painful, proper training through graded exercise will give those structures the opportunity to become stronger, more flexible, and more resilient thus allowing them to adapt to the demands being placed on them. Along with graded exercise, improving health through nutrition, better sleep, and reducing emotional burnout will enhance the body's ability to recover. Thus, there is a role for interdisciplinary management, which may include providers in the realms of nutrition, behavioral health, social work, movement systems, and other medical specialties, for example, in cases of sleep apnea.

By reframing the provider-patient experience in this way, the patient's beliefs are validated and not minimized, while at the same time, movement is being promoted instead of avoided. Expectations are also being set for improvement with conservative interventions and the importance of health behavior change is being highlighted. Most importantly, the clinical conversation is not stopping at the diagnosis of "degenerative disc disease," but instead, continuing forward to ensure the patient has access to the providers of choice for the many factors contributing to their pain experience. Patients not offered these opportunities should be empowered to advocate for themselves, either through collaboration with their health care provider, or, by seeking care in these areas of specialty through direct-access options.

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