

Personality and Pain: The Role of Personality Traits in Musculoskeletal Rehabilitation

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The interactions between body functions, mental processes, and the social environment are critical in healthcare but all too often not fully understood. For example, the field of musculoskeletal health involves treatment of the muscles, bones, joints, and connective tissues that support and move the body. Whilst clinicians are great at evaluating the physiological aspects of musculoskeletal problems, they often miss how an individual's psychological factors can influence treatment outcomes. Dr Matthew Williams, at Baylor University in the USA, is pioneering the application of personality psychology to musculoskeletal intervention strategies.

Holistic Healthcare: Biopsychosocial Considerations

The consideration of biopsychosocial factors, which integrate biological, psychological, and social elements, has proven vital in healthcare research and practice. This comprehensive, holistic approach recognises that overall physical health is not only affected by the underlying physiological conditions but also by an individual's psychological and social dynamics.

These effects are far-ranging. For example, depression can worsen chronic illnesses such as diabetes, and social support networks are known to improve recovery outcomes in cardiovascular patients. Patients improve significantly when chronic illnesses are managed with cognitive-behavioural therapy alongside traditional treatment, and obese patients who combine nutritional advice with therapy and social support are better at maintaining long-term weight loss. These examples highlight the importance of a holistic healthcare approach that considers biological, psychological, and social elements.

Dr Matthew Williams at Baylor University in the USA works with his dedicated team to apply a biopsychosocial approach to musculoskeletal health. By considering not just the physical aspects of musculoskeletal problems but also how those relate to psychological factors, they aim to improve rehabilitative medicine and move closer to patient-centred care. Implementing such a framework in healthcare practices will allow more personalised and effective treatment plans for patients.

What are the Big Five Personality Traits?

Dr Williams and his team focus specifically on the Big Five Personality Traits and how these could be applied to musculoskeletal medicine for better treatment outcomes. The

Big Five refers to a set of five extensively studied personality traits which capture consistent patterns of human thought, emotion, and behaviour. These five dimensions of personality are often remembered with the acronym OCEAN: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

When researchers assess the personality of people based on the Big Five, they compare how much a person prefers convention or is creative (Openness), is impulsive or deliberate (Conscientiousness), is reserved or social (Extraversion), is confrontational or relational (Agreeableness), is calm or anxious (Neuroticism). By ranking people on each of these traits and closely observing the combination, individual differences in personality can be effectively ascertained. The Big Five traits remain relatively stable throughout most of one's lifetime, are consistent across cultures, and have a large body of research demonstrating their predictive value in varied scientific fields, which means they are a reliable descriptor of an individual's personality.

Integrating Personality Assessment into Healthcare Practice

Dr Williams' summarised the current state of knowledge on the use of psychologically informed care, confirming the significant impact of personality traits on general healthcare outcomes. For example, people with high conscientiousness tend to live longer, which may be due to their increased propensity for thoroughness and commitment. For example, people high in conscientiousness tend to have improved adherence to medical regimens and a tendency not to skip regular medical screenings. People with high neuroticism combined with low conscientiousness tend to have higher emotional reactivity and low self-discipline, which increases the odds of negative healthcare outcomes.



These are just a few examples of how understanding personality traits can help healthcare providers tailor treatment plans that align with individual needs and improve the quality of care. Dr Williams argues that this robust association highlights the necessity for healthcare providers to integrate personality assessment into their practice.

Looking specifically at individuals with musculoskeletal conditions, Dr Williams and his colleagues examined eleven research articles and summarised how each of the Big Five personality traits might make rehabilitation easier or more difficult. They concluded that individuals high in neuroticism may experience heightened pain sensitivity and adopt passive coping strategies, potentially slowing down their recovery from injuries or surgeries. Conversely, those who are highly conscientious tend to be more diligent, which may promote an earlier recovery. Extraversion might play an important role, too. Some research suggests that sociable and outgoing individuals may engage in more physical activity, which promotes musculoskeletal strength and resilience. Finally, both agreeableness and openness may have an indirect effect through their influence on social support networks and willingness to explore alternative treatment methods.

One suggestion the team discusses thoroughly is an option to teach strategies which mitigate poor health outcomes linked with some personality traits, such as a high degree of neuroticism. For example, cognitive-behavioural therapy in combination with physical therapy can decrease fear and anxiety associated with therapeutic exercise. If healthcare providers are able to assess specific personality traits that might make the rehabilitation process more difficult, they may be able to suggest a form of therapy that could help with those aspects of personality. This could then, in turn, help with better treatment outcomes.

Personalising Musculoskeletal Rehabilitation

Dr Williams' work showcases the need to consider psychological aspects of health, such as one's personality, when choosing appropriate treatment strategies. By recognising the broad domains of openness, conscientiousness, agreeableness, and neuroticism, healthcare providers can gain valuable insights into how patients handle health-related challenges, stress, and injury. This evidence-based approach offers a structured framework for medical providers to incorporate patient personality into the rehabilitation process. The final goal, therefore, is to create a personalised musculoskeletal treatment plan based on a psychologically informed framework.

Of course, while the Big Five model provides a valuable tool for understanding patients' variability in reactions to treatment, it may not capture the full complexity of individual personalities. Dr Williams recognises that further refinements may need to be made to apply this framework to musculoskeletal healthcare.

Looking ahead, there are promising avenues for future research in this area. One direction that Dr Williams describes is exploring therapist-patient personality dynamics and how these influence the treatment outcome. Dr Williams and his colleagues are keen to explore these dynamics and are working to provide further evidence-based personalised treatment approaches that could improve patients' outcomes in musculoskeletal rehabilitation and beyond.

Trait	Factor 1 Extraversion	Factor 2 Agreeableness	Factor 3 Conscientiousness	Factor 4 Neuroticism	Factor 5 Openness
Facets	Warmth Outgoingness Assertiveness Activity Level Excitement Seeking Positive Emotion	Trust in others Candor Consideration Modesty Sympathy Compassion	Sense of Competence Orderliness/Organization Responsibility Need to Achieve Self-discipline Deliberateness	Worry Frustration Moodiness Social Concern Self-Indulgence Sensitivity to Stress	Imagination Aesthetic Sense Depth of Emotion Experiment Intellectual Curiosity Value Diversity
Yellow Flag	Pain Self-Efficacy		Pain Self-Efficacy		Kinesiophobia, Anxiety, Depression, Pain interference, Pain Catastrophizing
Definition	An active and passionate approach to the surrounding environment	A communal or loving disposition that focuses on empathy, trust, and respect for others	Defined by impulse control related to task and goal-oriented behavior	Broadly termed negative affect, this refers to an anxious, apprehensive, and emotionally volatile disposition	An open, creative, imaginative, and exploratory approach to real-world experiences and thought life
Predictive Health Associations	High extraversion is associated with positive psychosocial factors, active coping, decreased pain intensity and chronic pain	High agreeableness positively correlates with increased longevity in older adults and prosocial behaviors	High conscientiousness is associated with greater longevity, regular exercise routine, compliance with medical advice and treatment protocols	High neuroticism can promote proper vigilance and decreased mortality rates when paired with high agreeableness and conscientiousness	High openness is associated with decreased all life mortality, improved memory and physical function in aging, and higher education level
	High extraversion is also associated with novelty seeking, sexual risk taking, and increased BMI; Introversion is associated with negative psychosocial variables and disease progression	Low agreeableness is associated with increased risk of substance abuse and decreased compliance with medical advice	Low conscientiousness is associated with smoking, participating in risky sexual behavior, violence, and increased BMI	High neuroticism is associated with higher risk for mental health disorders, chronic MSK pain, passive coping, and decreased compliance with medical advice	High openness is also associated with increased novelty seeking and more liberal views on sexual activity/behavior

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This evidence-based approach offers a structured framework for medical providers to incorporate patient personality into the rehabilitation process.



MEET THE RESEARCHER

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Dr Matthew Williams is a United States Air Force Major with over fourteen years of human performance and rehabilitation experience. He obtained his PhD at the Department of Health, Human Performance, and Recreation, Baylor University, USA. Before that, he studied Experimental Psychology at the University of Colorado and Behavioural Sciences at the United States Air Force Academy. His other professional qualifications include a Doctorate in Physical Therapy from the United States Army-Baylor University, where he also currently works as an Assistant Professor. Dr Williams has received several distinguished honours for his work and service, presented at various events and conferences, and volunteered for multiple institutions.



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FURTHER READING

MK Williams, L Waite, JJ Van Wyngaarden, *et al.*, [Beyond yellow flags: The Big-Five personality traits and psychologically informed musculoskeletal rehabilitation](#), *Musculoskeletal Care*, 2023, 21(4), 1161–1174. DOI: <https://doi.org/10.1002/msc.1797>



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