

**13B: PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR AND MUSCULOSKELETAL DISORDERS**

**Introduction**

**S**edentary behaviour refers to any waking activity characterized by an energy expenditure  $\leq 1.5$  metabolic equivalents and a sitting or reclining posture.

In general, this means that any time a person is sitting or lying down, they are engaging in sedentary behaviour. Common sedentary behaviours include TV viewing, video game playing, computer screen time, seated employment, driving and reading.<sup>1</sup>

Lack of physical activity is a common factor in many chronic conditions<sup>2</sup> and inactivity has been directly linked to musculoskeletal changes.<sup>3</sup> Physical inactivity is highlighted as a threat to musculoskeletal health across the lifespan.<sup>4</sup>

Musculoskeletal disorders (MSDs) related to sedentary lifestyles and minimal physical activity are:

- non-specific low back pain
- sciatica/lumbar radicular pain
- osteoporosis
- osteoarthritis
- neck pain with and without radiculopathy
- patellofemoral joint pain
- hip pain

It has been suggested that the mechanism through which the sedentary behaviour negatively affects joint health is largely related to deconditioning.<sup>5</sup> Further studies have shown the greater risk of sarcopenia associated with longer sitting time.<sup>6</sup>

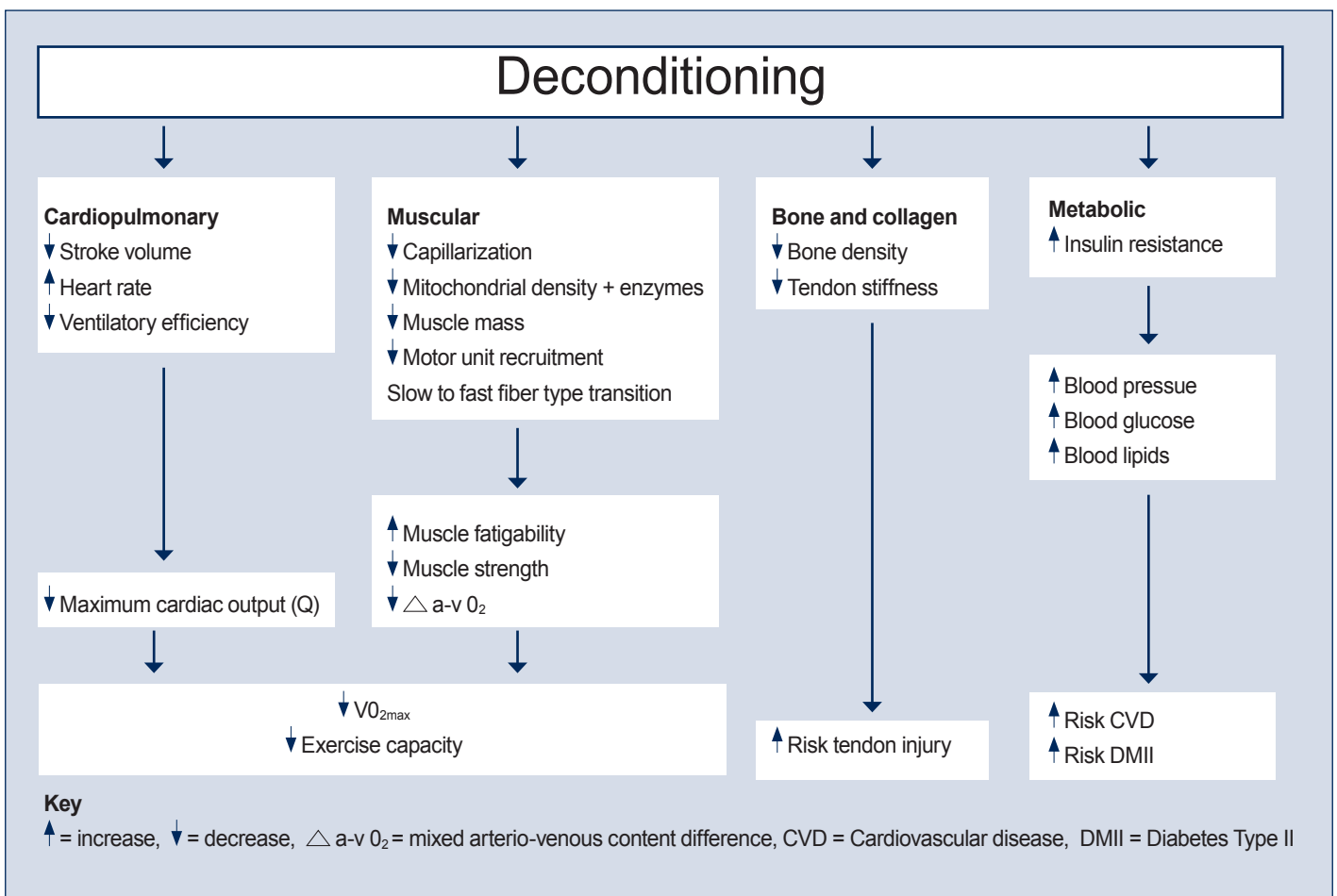


Figure 1. The physiological consequences of deconditioning<sup>5</sup>.



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The following section gives examples of the impact of sedentary behaviour on some aspects of musculoskeletal health:

**Back pain**

Low back pain is one of the biggest causes of absence from the workplace,<sup>7</sup> accounts for a high demand on healthcare provision, is multifactorial, and common aetiologies of which are; sedentary behaviour, being overweight and obese, and harmful lifestyle choices e.g. smoking, poor diet, poor social interaction<sup>8</sup>. Current thinking is moving away from rest and toward active recovery and rehabilitation alongside encouraging lifestyle improvements. Physical inactivity is associated with in a clear dose-dependent manner<sup>9</sup> with:

- narrower intervertebral discs
- higher fat content of lumbar muscle and fascial tissues
- high intensity low back pain and disability

A systemic review assessed how behavioural interventions compare to no intervention and guideline-based active treatment.<sup>10</sup> Interventions regarding behavioural approaches to help people better manage persistent low back were seen to yield good improvements in pain, disability and quality of life. Another systemic review and meta-analysis<sup>11</sup> of multidisciplinary biopsychosocial rehabilitation (MBR) of patients with chronic low back pain consolidate this holistic approach finding MBR to be more effective than usual care (moderate quality evidence) and physical treatments (low quality evidence) in decreasing pain and disability in people with chronic low back pain.

Lower back pain with lumbar radicular pain/sciatica is common<sup>7</sup> and through systematic review and meta-analysis, the risk of occurrence has shown to be reduced with physical activity<sup>12</sup> increased with long smoking history, a high serum C-reactive protein level,<sup>13</sup> and being overweight and/or obese with a dose dependent relationship.<sup>14</sup>

Contextualising this with the World Health Organisation and Chief Medical Officers recommendation of 150 minutes per week of moderate intensity exercise,<sup>15</sup> sedentary lifestyle behaviour can be suggested as a causative factor for non-specific low back pain. A systematic review<sup>16</sup> highlights the benefits of exercise therapy for non-specific low back pain with regards to function and pain. This highlights the need for patient specific exercise to encourage participation and a move toward a more active lifestyle.

**NICE guidelines NG 59<sup>17</sup>** on Low back pain and sciatica call for greater emphasis on exercise and psychological therapies:

- Encourage patients to continue with normal activities
- Consider a group exercising programme as part of the treatment regime
- Consider manual therapies (manipulations and soft tissue massage) but only as part of a treatment package including exercise, with or without psychological therapy
- Consider psychological therapies using a cognitive behavioural approach but only as part of a treatment package including exercise, with or without manual therapies

In conclusion, sedentary lifestyles are a major factor in non-specific low back pain and back pain with accompanying radicular pain and can be treated in many ways with exercise and a holistic multidisciplinary approach being particularly effective.

**Contraindications**

any suspected or known recent fracture, tumour or infection of the back.<sup>18</sup>

**Ankle**

In relation to sedentary lifestyles, Achilles tendon pathology and pain is seen to be particularly susceptible to lower levels of physical activity<sup>19</sup> and Achilles tendon pathology was more common in patients with greater Body Mass Index (BMI).<sup>20</sup> Through retrospective analysis to elucidate the role of BMI in the development and treatment of Achilles tendon pathology, a high BMI was seen to play a role in the development of Achilles tendon pathology, although, somewhat reassuringly, not affecting the response to conservative treatment.

It could be extrapolated that Achilles tendon pain could arise from deconditioning associated with sedentary lifestyles and through exercise, reconditioning of tissues along with the secondary effects of exercise such as decreased pain sensitivity<sup>21</sup> could be an effective management. There is good evidence for the benefits of graded loading to pathological tendons which can be applied to other tendinous muscle attachment, such as patellar tendinopathy.<sup>22</sup> Coupled with this, obesity as a risk factor has been identified for several types of tendinopathy including: rotator cuff, elbow extensor compartment (tennis elbow), patellar, quadriceps, Achilles and the plantar fascia.<sup>23</sup>

**Knee**

Sedentary lifestyles play a part in the development of non-traumatic knee pain. A systematic review found some limited evidence for, amongst other biomechanical factors: weight, BMI, and waist-to-hip ratio.<sup>24</sup> Treatment options highlighted have focussed on affecting these, with increasing strength, decreasing body weight and upper leg flexibility identified as being most effective.

Osteoarthritis of the knee is commonly seen in those entering the later stages of life with a wide range of hypotheses on the causes and effects of arthritis. NICE (2014) guidelines<sup>25</sup> highlight exercise as a core treatment to focus on local muscle strengthening and general aerobic fitness, although people with knee osteoarthritis tend to fall short of physical activity guidelines and recommended daily steps.<sup>26</sup>

**Shoulder**

Musculoskeletal shoulder pathology includes: frozen shoulder, rotator cuff pathology, and glenohumeral and acromioclavicular joint osteoarthritis. Pain is frequently caused through falls and degenerative changes in both the rotator cuff and glenohumeral joint, particularly in elderly patients. Whereas exercise has been seen to be a highly effective treatment method for these conditions,<sup>27-29</sup> identification of factors associated with sedentary lifestyles have been made in regards to increased risk of shoulder pathology.<sup>30</sup> ➔

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In a large cross-sectional study assessing associations of lifestyle factors and metabolic factors with shoulder pain and rotator cuff tendon pathology, associations of abdominal obesity and smoking in male and females were clear.

Thus, it could be concluded that non-traumatic shoulder pain incidence is affected by sedentary lifestyles and decreased physical inactivity and to affect this, lifestyle changes regarding physical activity and combatting sedentary lifestyles would be of benefit.

**Key message:**

Physical activity is an important part of prevention and management of musculoskeletal disorders. In addition, specific exercises may be important from a qualified professional.

**Consider:**

Auditing your sedentary patients to see if they have been offered any physical activity advice.

**Benefits to health professionals:**

Reduced appointments and pain relief prescriptions.

**Signpost** to the [Chartered Society of Physiotherapy website for GP's](#)

Extracted from the Wales HEIW CPD module on physical activity [Motivate2Move](#). Now part of the RCGP Clinical Priority on physical activity and lifestyle

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