

eAppendix.
Detailed Description of the 4 Stages of the Cognitive Functional Therapy (CFT) Intervention

Stages	Components	Details
<p>1. Cognitive training</p>	<p>Changing perception of pain as “harm” and “threatening” and education regarding the multidimensional nature of chronic pain: A contemporary view of chronic pain physiology was presented. This view emphasized how chronic pain more accurately reflects nervous system sensitivity than harm or structural damage and that multiple factors across the biopsychosocial spectrum are relevant in the development and management of chronic pain. This presentation integrated the biopsychosocial model for nonspecific chronic low back pain (NSCLBP) and outlined maladaptive cognitions and maladaptive behaviors as part of NSCLBP.</p>	<p>All participants watched an online video regarding chronic pain (http://www.youtube.com/watch?v=488oB757DKc) at the first session. This video was used to address commonly held beliefs that pain is an accurate indicator of the health of spinal tissues. The manner in which negative beliefs about pain, fear of movement, avoidance, increased focus on pain, low mood, poor pacing, “protective” movement behaviors, muscle guarding, and pain behaviors can feed a “vicious cycle” of pain was outlined in a diagram based on each person’s and the completed questionnaires. The specific factors discussed varied for each participant and included psychosocial factors such as pain interpretation, beliefs about NSCLBP, fear, anxiety, worry, depression, stress, hypervigilance, guilt, grief, anger, and stressful or traumatic life events. This process was openly discussed, and participants were invited to consider how they might be able to break their cycle and set their own goals for management. These functional goals formed the basis on which the individual management plan was developed and targeted.</p>
	<p>Interpretation of radiological findings: If participants had previously undergone spinal imaging or were considering further imaging, this component was discussed.</p>	<p>Participants were informed about the poor correlation of radiological findings with their clinical presentation. The fact that such radiological findings are common in individuals who are pain-free, and generally correlate poorly with levels of pain and disability, also was discussed. They were educated about the strong, robust nature of the spine in dealing with movement and mechanical loads.</p>
	<p>Management of fluctuations in pain and acute exacerbations: The overall emphasis of this component was to change the way the person with low back pain conceptualized his or her problem on a long-term basis.</p>	<p>Participants were asked to interpret weekly fluctuations in their pain in relation to events (physical, psychological, social) that occurred during the week. Prior to discharge, acute exacerbation management planning was discussed with each participant to promote an active or confrontational approach to ongoing pain management.</p>
<p>2. Functional movement training</p>	<p>Re-education of normal postural and movement behaviors: This stage aimed to normalize functional behaviors using a graduated exposure model, where participants were exposed to previously pain-provocative tasks but in a nonprovocative manner. This component was conducted through modification of their body postures, movement patterns, and levels of muscle guarding and their perception of the meaning of pain while discouraging pain behaviors.</p>	<p>All participants received targeted functional postural and movement training based on the specific tasks that they avoided due to pain or that provoked their pain, or both. The emphasis was on facilitating awareness of how their “protective” pain-related functional behaviors could maintain pain. Simple nonthreatening low-load exercises were gradually progressed toward higher loads and more complex functional exercises as participants gained confidence and control in performing the tasks. For example, if a participant was initially unable to relax his or her trunk muscles, he or she was initially taught diaphragmatic breathing in relaxed postures, such as lying, sitting, and standing. Once this part of the training was achieved, participants progressed to performing more challenging tasks in a relaxed, mindful, and controlled manner. Pain behaviors, such as grimacing, breath holding, muscle guarding, propping with hands, or avoidance (eg, asymmetrical loading), were identified and abolished, with practical demonstration by the therapist. This demonstration was augmented by the use of videos and mirrors so that participants could view their own spines to enhance body awareness, written instructions, and stick body diagrams (outlining the “old way” vs the “new way” of sitting, standing, bending, lifting, and moving). No more than 3 or 4 exercises were given at a time.</p>

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3. Functional integration	<p>Functional integration into each participant's nominated pain-provocative tasks: The exercises from stage 2 were integrated functionally into problematic daily tasks specific to each participant's functional impairments. The aim was to restore normal functional movement capacity and enhance body awareness while reducing avoidance, pain behaviors, and fear by means of pain control and confrontation in daily life.</p>	<p>Participants nominated specific tasks that provoked their pain. These tasks were rehearsed with the therapist so that participants became more confident and mindful of normalizing their movements while performing these tasks. If the participants reported tasks they avoided, these tasks were rehearsed, and participants were encouraged to confront these tasks (without protective pain behaviors) and include them in their daily life. In this manner, the aim was to increase functional capacity, and participants were challenged to perform the tasks in a normal, pain-free, and controlled manner. For example, if a participant reported pain (or fear of pain) with lifting, a graded series of lifting tasks was rehearsed, with feedback from the therapist. The re-emergence of maladaptive physical and psychological behaviors during such tasks was closely monitored and discussed with participants. The difficulty of these tasks was gradually increased in conjunction with participants. Where the participant's functional goals required it, this training was progressed into a conditioning program to build strength and endurance within these functional tasks, if required.</p>
4. Physical activity and lifestyle training	<p>Advice on physical activity, sleep hygiene, and stress management: Participants were encouraged to perform some form of physical exercise 3–5 times a week if they were not previously doing so. The duration for this component was initially based on the participants' exercise tolerance and gradually increased to 20–40 minutes' duration.</p>	<p>No specific form of exercise was prioritized, with the emphasis instead being placed on performing exercise in a relaxed, mindful manner to facilitate normal movement. The type of the physical activity was directed by participant preference, the availability of space and resources, and their symptoms during specific activities. Personalized tips on sleep hygiene and stress coping strategies, such as relaxation breathing strategies, were developed in collaboration with each patient.</p>