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## The inclusion of activities of daily living in flexor tendon rehabilitation: A survey

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### ABSTRACT

Studies have shown that patients restricted to one-handed use due to trauma or surgery often have difficulty with activities of daily living (ADLs). In order to assess hand therapists' perspectives and practices regarding ADL assessment and intervention, a 21-item survey was e-mailed to members of the American Society of Hand Therapists (ASHT). Results of the survey indicate that the majority of hand therapists surveyed (97.5%) feel that ADL performance is an important part of hand therapy practice and that teaching adaptive strategies is a high priority in the early weeks of flexor tendon rehabilitation, but less than half (45.5%) actually provide a formal assessment of ADL performance in order to discover patients' ADL needs. Reasons for this discrepancy between beliefs and practices are explored through participants' comments in the survey. Level of evidence: 3b.

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### Introduction

Flexor tendon injuries are considered one of the more complex diagnoses that hand therapists deal with, particularly when they occur in Zone II, due to the high risk of restrictive adhesions occurring in the tendon sheath.<sup>1</sup> The difficulty in attaining the desired intact gliding tendon has led to volumes of research and an evolution of surgical and rehabilitative approaches over time.<sup>1–3</sup> The bulk of research and management approaches have focused on the science of the healing tendon, including millimeters of glide necessary to prevent restrictive adhesions, forces delivered through different exercises, and strength of various repairs.<sup>3–10</sup> The volume of information to be integrated into a rehabilitation plan can be daunting, especially for therapists who rarely treat this injury; however, the importance of the rehabilitative period cannot be underestimated. In his article on achieving an ideal gliding surface for healing tendons, Amadio suggests that while surgical repair technique is important, the management of the healing tendon after the surgery is paramount in determining outcome.<sup>5</sup> The balance between preserving the repair and maintaining tendon glide can become the driving concern for the therapist, and may dictate

the rehabilitation experience for many patients. In our attempts to maintain an ideal biological environment for the tendon, are we forgetting the person that the tendon belongs to? To date, protocols and practice have not incorporated the impact of flexor tendon repair on impairments in activities and participation in life roles.

A limitation in the performance of activities of daily living (ADL) as a result of upper extremity injury has been studied with patients following traumatic hand injuries, flexor tendon repairs, and extensor tendon repairs. A study by Gustaffson, Persson, and Amilon interviewed 20 patients between 8 and 20 days after an acute traumatic hand injury.<sup>11</sup> All patients in this study reported difficulty with ADLs, including dressing, toileting, meal preparation, and driving. These practical problems and the necessity of dependence on others to help solve them were reported as stress factors by patients in the study. In subsequent research, Gustaffson and Ahlström assessed an additional 91 patients prospectively during the year following an acute traumatic hand injury.<sup>12</sup> The researchers found that the need for assistance with ADLs decreased significantly between 1–2 weeks and 3 months. However, during this time frame the majority of patients reported a “need for help with activities of vital importance in everyday life such as eating, washing, and dressing.”

Due to such limitations in ADL performance, researchers have suggested that hand therapists should assume a more intentional

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role in prioritizing these issues. Sandford, Barlow, and Lewis surveyed 76 subjects 4 weeks after extensor or flexor tendon repair.<sup>13</sup> Fifty one patients (67.1%) reported non-adherence with orthotic wear, with 3 out of 4 leading reasons pertaining to ADL: to wash the hand, for dressing, and for bathing. These authors concluded that therapists should devote more time and provide more in-depth information to their patients in order to facilitate adherence to post-operative precautions. The results of a subsequent survey of 91 patients following traumatic hand injuries conducted by Bell, Gray, and Kingston concurred with this suggestion.<sup>14</sup> They concluded that therapists need to investigate the personal needs of patients in terms of work, leisure and family roles in order to design individualized rehabilitative programs which are not grounded solely in a biomechanical approach. Thirty six percent of their sample reported moderate to extreme difficulty with ADL activities, with work and leisure being the most affected aspects of occupational performance. In this study, 27.5% of patients were overall less satisfied with life than before their injury. Most recently, a 2013 study by Kaskutas and Powell explored the impact of flexor tendon restrictions on independence with ADL in 19 patients who had undergone flexor tendon repair within 6–12 months of being interviewed.<sup>15</sup> Their research revealed that patients experienced difficulty with, or were unable to perform, self-care and household management tasks, including dressing, bathing, grooming, and meal preparation.

There is a lack of research exploring whether there are frameworks to adequately address these issues of ADL impairment and upon which assessment and treatment protocols of individuals with various hand injuries can be based. Such frameworks could expand the management of these injuries beyond the biomechanical aspects of rehabilitation and incorporate implications of such injuries on activities and participation. The International Classification of Functioning, Disability and Health (ICF) has been set forth as a holistic model to guide health practitioners in mapping health and disablement of their clients and has great relevance to hand therapists. Moreover, there is literature to support the necessity of a more holistic approach to intervention following upper extremity injuries that limit hand use.<sup>11–15</sup> Despite this, hand therapy assessment and treatment protocols have traditionally focused on one component of the framework, Body Functions and Structures, and have not typically addressed the areas of activities and participation, environmental factors, and personal factors.<sup>1–10</sup> Therefore, there is very little information about which measures can be used for assessing the aspects of limitations in activities and participation.

Self-report outcome measures have been introduced into the practice of hand therapy as a means to more holistically identify issues, as well as to measure progress and outcomes. A strong proponent of such tools, MacDermid stated that the functional status of patients with upper extremity tendon injuries is “assumed more than measured.”<sup>16</sup> Further, she found that range of motion (ROM) is the primary, and sometimes only, outcome measure used by hand therapists for patients with tendon injuries, despite the fact that it is not clear that ROM is directly related to activity or function. There are a number of validated functional outcome measures available for hand therapists to use with their patients. The Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire is a region-specific measure for assessing disability and functional impairment resulting from upper extremity conditions. Considered the gold standard of upper extremity self-report, the psychometric properties of the DASH have been researched thoroughly including validity, excellent reliability, and responsiveness to clinical change for patients with a variety of upper extremity diagnoses.<sup>17–20</sup> The Patient-Rated Wrist Evaluation (PRWE) is a joint-specific measure that was designed to capture client-rated

measurement of impairment, disability, and handicap that could be used in clinical and research settings.<sup>21</sup> Reliability and content, construct, and criterion validity have been confirmed for this tool.<sup>21</sup> The Canadian Occupational Performance Measure (COPM) utilizes individual activity limitation and goal setting as obtained through an open-ended, semi-structured interview.<sup>22</sup> This measure has been found to be valid, reliable, and responsive for multiple disease populations, including patients with hand injuries and rheumatoid arthritis.<sup>22,23</sup> These measures have been linked to the ICF, assess the domains of activities and participation, and can be useful to assess these domains in patients with flexor tendon injury.<sup>24–26</sup>

Why, then, aren't outcome measures utilized more broadly by therapists? Time constraint is often suggested as a key barrier. However, insufficient knowledge of the importance of outcome measures, lack of a master's degree, and poor access to measurement tools have been suggested to be more indicative of low usage as compared to time constraints.<sup>27–29</sup>

These research findings and guidelines indicate a holistic direction that hand therapy should follow when mapping out a rehabilitation program for patients limited to one-handed use, however, it is not clear that this is occurring. In order to discover current thinking and practices amongst hand therapists in regards to this, a population of patients who are universally temporarily limited to one-handed use was identified. Patients who have undergone flexor tendon repair constitute such a population. Literature review reveals a dearth of information on how hand therapists are incorporating ICF guidelines into their rehabilitation paradigm to address ADL issues with these patients. Because it can be difficult to know how to improve therapy practice without discovering current practice patterns, it is important to audit the current ADL assessment and treatment practices of practicing hand therapists. To this end, we designed and administered an electronic survey to discover therapists' beliefs and practices toward ADL intervention with patients who have undergone flexor tendon repair and are on one-handed status.

### Purpose of the study

The purpose of this study was to gain insight into the beliefs and practices of hand therapists as they pertain to incorporating ADL intervention with patients who have undergone flexor tendon repair, and are on one-handed status, in order to establish a baseline for building improved practice patterns. In this effort, multiple factors regarding hand therapists' approach to integrating ADL into flexor tendon rehabilitation were investigated. These factors included hand therapists' beliefs about whether formal ADL assessment is necessary, which methods they use to assess ADL, and whom they believe is responsible for initiating ADL intervention: the patient or the therapist? Finally, the study seeks to determine if therapists are teaching ADL strategies to patients who have undergone flexor tendon repair and are on temporary one-handed status.

### Methods

The researchers developed a 21-item open survey of hand therapists' beliefs and practices regarding ADL intervention with patients who have undergone flexor tendon repair and are on one-handed status. One of the survey designers has previous experience with conducting online surveys for research, and both researchers have had more than 15 years of experience working with patients who have undergone flexor tendon surgery. Both survey designers have conducted, published, and presented research on flexor tendon rehabilitation. The survey was developed to capture four categories of information: characteristics of respondents, factors involving evaluation of ADL, attitudes toward teaching ADL in

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