

**A GUIDE TO THE
TRINITY AMPUTATION AND PROSTHESIS EXPERIENCE SCALES - REVISED
(TAPES-R)**

Dublin Psychoprosthetics Group: www.psychoprosthetics.ie

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Description of TAPES-R

The TAPES-R is a multidimensional assessment designed to facilitate examination of the psychosocial processes involved in adjusting to a prosthesis and the specific demands of wearing a prosthesis. The TAPES-R comprises a Psychosocial Scale with subscales consisting of five items each (General Adjustment, Social Adjustment, and Adjustment to Limitation). The second section consists of an Activity Restriction Scale incorporating 10 items. The third section concerns Satisfaction with the Prosthesis and comprises 8 items, which are subdivided into two scales, the Aesthetic and Functional characteristics of the prosthesis. The fourth section explores the experience of phantom limb pain, residual limb pain, and other medical conditions not related to the amputation. Each of these are subdivided into questions relating to how often it is experienced, how long each episode lasts, how the level of pain could be described and the extent to which it interferes with their daily lifestyles. This section also incorporates two items requesting respondents to rate their health and physical capabilities. Overall, the TAPES-R consists of 64 items and administration time is approximately 15 minutes.

While using the complete TAPES-R gives a comprehensive picture, each of the scales can be used individually. A further description of the development of the TAPES-R and reviews of salient psychometric data are published in:

- Gallagher, P. & MacLachlan, M. (2000) *Development and psychometric evaluation of the Trinity Amputation and Prosthesis Experience Scales (TAPES)*. *Rehabilitation Psychology*, 45, 130-154.
- Gallagher P, Franchignoni F, Giordano A, MacLachlan M. (2010) *Trinity Amputation and Prosthesis Experience Scales: A Psychometric Assessment Using Classical Test Theory and Rasch Analysis (TAPES)*. *American Journal of Physical Medicine and Rehabilitation*. 89 (6): 487-496.

A copy of the TAPES-R can be downloaded and freely copied for teaching, clinical and/or research purposes from our webpage at:

www.psychoprosthetics.ie

If you are intending to use the TAPES-R, we would ask that you complete the TAPES-R Users' Brief Project Description Form and return to pamela.gallagher@dcu.ie

If you have any queries regarding the TAPES-R, please contact: pamela.gallagher@dcu.ie

We have a version of the TAPES-R that is adapted for use with people with limb loss who do not use a prosthesis. Please contact pamela.gallagher@dcu.ie for further information.

We also have a version that is adapted for use with people with upper limb loss. Please contact pamela.gallagher@dcu.ie for further information.

Rationale for TAPES-R

To truly capitalise on the current rate of advancement in the development of limb prostheses, it is important to attend not only to the physical and technological factors which play a fundamental role, but also the social and psychological issues facing people who will ultimately be using the prescribed technology.^{1,2} The considerable variability in people's adjustment to limb loss and subsequent prosthesis usage has resulted in a search for a method to investigate level of adjustment to a prosthesis and the factors related to prosthetic use. At the time of the development of the original Trinity Amputation and Prosthesis Experience Scales (TAPES)³, there was no multidimensional psychometric assessment tool specific to limb loss that was theoretically and empirically derived and would allow these issues to be part of a routine assessment. Its theoretical and empirical foundation, and the subsequent demonstration of good reliability and validity argue for its applicability as a supplement to clinical assessment and its contribution as a research tool.^{3, 4}

The aim of the TAPES/TAPES-R is to enable an examination of the psychosocial processes involved in adjusting to a prosthesis, the specific demands of wearing a prosthesis and the potential sources of maladjustment. The intention is to provide a mechanism that will allow the assessment and planning of future care programmes to be more efficient and effective. The TAPES/TAPES-R has been used in both clinical and research contexts to facilitate the exploration of the relationships between the different variables and the identification of those factors, which promote successful rehabilitation and adjustment to wearing a prosthesis and those which interfere. According to Desmond and MacLachlan (2002)⁵, equipping health care professionals with information from this type of psychometric assessment will further enhance their understanding of the user's perspective and allow for more collaborative working relationships.

The investigation of the psychometric properties of the TAPES/TAPES-R and its application to different client groups is ongoing. See www.psychoprosthetics.ie for a complete listing of projects and publications from the Dublin Psychoprosthetics Group.

For additional information on ongoing work by clinicians, researchers and academics using the TAPES/TAPES-R for different purposes and in different settings, please contact pamela.gallagher@dcu.ie.

1 Gallagher P (2004) Introduction to psychosocial perspectives on amputation and prosthetics. *Disability and Rehabilitation* 26(14-15): 827-831.

2 Gallagher, P., Desmond D., MacLachlan M. (2008). *Psychoprosthetics*. Springer: New York.

3 Gallagher, P. & MacLachlan, M. (2000) Development and psychometric evaluation of the Trinity Amputation and Prosthesis Experience Scales (TAPES). *Rehabilitation Psychology*, 45, 130-154.

4 Gallagher P, Franchignoni F, Giordano A, MacLachlan M. (2010) Trinity Amputation and Prosthesis Experience Scales: A Psychometric Assessment Using Classical Test Theory and Rasch Analysis (TAPES). *American Journal of Physical Medicine and Rehabilitation*. 89 (6): 487-496.

5 Desmond D, MacLachlan M. (2002). Psychosocial issues in the field of prosthetics and orthotics. *Journal of Prosthetics and Orthotics* 14(1): 19-22.

A Selection of Publications of Empirical Research with TAPES/TAPES-R

Peer Reviewed Journal Publications

- Atherton R. & Robertston, N. (2006). Psychological adjustment to lower limb amputation amongst prosthesis users. *Disability and Rehabilitation*. 28(19): 1201-9.
- Coffey L, Gallagher P, Horgan O, Desmond D, MacLachlan, M. (2009). Psychosocial adjustment to diabetes-related lower limb amputation. *Diabetic Medicine*, 26(10): 1063-1067
- Deans, SA., McFadyyn AK, Rowe PJ. (2008). Physical activity and quality of life: A study of a lower-limb amputee population. *Prosthetics and Orthotics International*, 32(2): 186-200.
- Desmond, D. M. (2007). Coping, affective distress and psychosocial adjustment among people with traumatic upper limb amputations. *Journal of Psychosomatic Research* 62(1): 15-21.
- Desmond, D.M., Gallagher, P. , Henderson-Slater, D., Chatfield, R. (2008). Pain and psychosocial adjustment to lower limb amputation amongst prosthesis users. *Prosthetics and Orthotics International*, 32(2): 244-252.
- Desmond, D. M., & MacLachlan, M. (2006). Affective distress and amputation-related pain among older men with long-term, traumatic limb amputations. *Journal of Pain and Symptom Management*, 31(4), 362-368.
- Desmond, D. M., & MacLachlan, M. (2006). Coping strategies as predictors of psychosocial adaptation in a sample of elderly veterans with acquired lower limb amputations. *Social Science & Medicine*, 62(1), 208-216.
- Desmond, D. M., & MacLachlan, M. (2005). Factor structure of the Trinity Amputation and Prosthesis Experience scales (TAPES) with individuals with acquired upper limb amputations. *American Journal of Physical Medicine & Rehabilitation*, 84(7), 506-513.
- Desmond, D. M., O'Neill, K., de Paor, A., Mac Darby, G., & MacLachlan, M. (2006). Augmenting the Reality of Phantom Limbs: three case studies using an augmented mirror box procedure. *Journal of Prosthetics & Orthotics*, 18(3), 74-79.
- Gallagher, P., Allen, D., & MacLachlan, M. (2001). Phantom limb pain and residual limb pain following lower limb amputation: a descriptive analysis. *Disability and Rehabilitation*, 23(12), 522-530.
- Gallagher P, Franchignon F, Giordano A, MacLachlan M. (2010) Trinity Amputation and Prosthesis Experience Scales: A psychometric assessment using classical test theory and rasch analysis (TAPES). *American Journal of Physical Medicine and Rehabilitation*. 89 (6): 487-496.
- Gallagher P, Horgan, O., Franchignoni, F., Giordano, A., & MacLachlan, M. (2007). Body image in people with lower limb amputation: a Rasch analysis of the Amputee Body-Image Scale (ABIS). *American Journal of Physical Medicine and*

- Gallagher, P., & MacLachlan, M. (2004). The trinity amputation and prosthesis experience scales and quality of life in people with lower-limb amputation. *Archives of Physical Medicine and Rehabilitation*, 85(5), 730-736.
- Gallagher, P., & MacLachlan, M. (2002). Evaluating a written emotional disclosure homework intervention for lower-limb amputees. *Archives of Physical Medicine and Rehabilitation*, 83(10), 1464-1466.
- Gallagher, P., & MacLachlan, M. (2000). Positive meaning in amputation and thoughts about the amputated limb. *Prosthetics and Orthotics International*, 24(3), 196-204.
- Gallagher, P., & MacLachlan, M. (2000). Development and psychometric evaluation of the trinity amputation and prosthesis experience scales (TAPES). *Rehabilitation Psychology*, 45(2), 130-154.
- Karmarkar AM, Collins DM, Wichman T, Franklin A, Fitzgerald SG, Dicianno BE, Pasquina PF, Cooper RA. (2009). Prosthesis and wheelchair use in veterans with lower-limb amputation. *Journal of Rehabilitation Research and Development*, 46(5):567-575.
- Mazaheri M, Fardipour S, Salavati M, Hadadi M, Negahban H, BAhramizadeh M, Khosrozadeh F. (2011). The Persian version of Trinity Amputation and Prosthetics Experience Scale: translation, factor structure, reliability and validity. *Disability & Rehabilitation* 33(19-20):1737-45.
- Murray, C. D., & Fox, J. (2002). Body image and prosthesis satisfaction in the lower limb amputee. *Disability and Rehabilitation*, 24(17), 925-931.
- Murray CD, Patchick E, Pettifer S, Caillette F, Howard T. (2006). Immersive virtual reality as a rehabilitative technology for phantom limb experience: A protocol. *Cyberpsychology and Behaviour* 9 (2): 167-170
- Parker K., Kirby R., Adderson, J., Thompson, K., (2010). Ambulation of People With Lower-Limb Amputations: Relationship Between Capacity and Performance Measures. *Archives of Physical Medicine and Rehabilitation*, 91(4): 543-549.
- Price, J. (2005). Exploring the Phantom Phenomenon from a Psychophysiological Perspective. *Journal of Prosthetics and Orthotics* 17(3).
- Seidel E, Lange C, Wetz HH, Heuft G. (2006). Anxiety and depression after loss of a lower limb. *Orthopade* 35 (11): 1152
- Topuz S, Ulger O, Yakut Y, Gül Sener F. (2011). Reliability and construct validity of the Turkish version of the Trinity Amputation and Prosthetic Experience Scales (TAPES) in lower limb amputees. *Prosthet Orthot Int.* 35(2):201-6.
- Unwin J, Kacperek L, Clarke C (2009). A prospective study of positive adjustment to lower limb amputation. *Clinical Rehabilitation*, 23(11): 1044-1050.

Unpublished Dissertations

- Atherton, R.J. (2002). *Psychological adjustment to lower limb amputation*. D.Clin.Psy., Leicester, UK.
- Crawford, C. (2005). *Contribution to the cultural validation and adaptation of a measuring instrument, TAPES*. Superior Health School of Alcoitão, Portugal.
- McGregor, L. (2004) *Do positive meanings and thoughts about the amputated limb effect the adjustment of amputees?* MSc Health Psychology: Queen Margaret University College in Edinburgh.
- Price, J. B. J. (2004). *The relationship among physical, social, and emotional experiences of limb amputation and depression: A model of holistic continua.*, Univ Microfilms International.
- Uytman, C. (2004) *An investigation of differences in functional and aesthetic prosthesis satisfaction, and body image in relation to age and gender in lower limb, unilateral amputees*. MSc Health Psychology: Queen Margaret University College in Edinburgh.

SCORING THE TRINITY AMPUTATION AND PROSTHESIS EXPERIENCE SCALES - REVISED (TAPES-R)⁶

The TAPES-R is scored manually (see attached TAPES-R with scoring included). There are six subscale scores, which do not include the pain questions in Part 2. We do not recommend one overall score but six individual scores. While the use of the complete TAPES-R provides a comprehensive picture, each scale/subscale can be used individually. Some items are positively loaded and some are negatively loaded (see attached TAPES-R with scoring included). You can tell this by the direction of the scoring.

The TAPES-R subscale scores are calculated as follows:

Psychosocial Adjustment subscales

General Adjustment: Add the values corresponding to items 1-5 in Part 1 (p3) and divide by the number of items that were deemed applicable/answered

Social Adjustment: Add the values corresponding to items 6-10 in Part 1 (p3) and divide by the number of items that were deemed applicable/answered

Adjustment to Limitation: Add the values corresponding to items 11-15 in Part 1 (p3) and divide by the number of items that were deemed applicable/answered

High scores on these subscales are indicative of adjustment

Activity Restriction Scale

Add the values corresponding to items a-j in Part 1 (p4) and divide by the number of items that were deemed applicable/answered

A high score is indicative of activity restriction

Satisfaction with Prosthesis subscales

Aesthetic Satisfaction: Add the values corresponding to items *i-iii* in Part 1 (p5)

Functional Satisfaction: Add the values corresponding to items *iv-viii* in Part 1 (p5)

High scores on these subscales are indicative of satisfaction with prosthesis

We are currently developing norms for the TAPES-R. At the moment, each score is compared against the group average and/or over time.

Please contact pamela.gallagher@dcu.ie for collated subscale data from available studies.

⁶ Gallagher P, Franchignoni F, Giordano A, MacLachlan M. (2010) Trinity Amputation and Prosthesis Experience Scales: A Psychometric Assessment Using Classical Test Theory and Rasch Analysis (TAPES). *American Journal of Physical Medicine and Rehabilitation*. 89 (6): 487-496.

TRINITY AMPUTATION AND PROSTHESIS EXPERIENCE SCALES - REVISED (TAPES-R)

Scoring for People with a Prosthesis: (See attached TAPES-R with scoring included).

Name: _____	Date --/--/----	Date --/--/----	Date --/--/----	Date --/--/----	Date --/--/----	Date --/--/----
Psychosocial Adjustment subscales						
<i>General Adjustment:</i> In Part 1 (p3) add the values of: Item 1 + Item 2 + Item 3 + Item 4 + Item 5 and divide by the number of items that were deemed applicable/ answered A high score is indicative of positive adjustment						
<i>Social Adjustment:</i> In Part 1 (p3) add the values of: Item 6 + Item 7 + Item 8 + Item 9 + Item 10 and divide by the number of items that were deemed applicable/ answered A high score is indicative of positive adjustment						
<i>Adjustment to Limitation:</i> In Part 1 (p3) add the values of: Item 11 + Item 12 + Item 13 + Item 14 + Item 15 and divide by the number of items that were deemed applicable/ answered A high score is indicative of positive adjustment						
Activity Restriction scale						
In Part 1 (p4) add the values of: Item (a) + Item (b) + Item (c) + Item (d) + Item (e) + Item (f) + Item (g) + Item (h) + Item (i) + Item (j) and divide by the number of items that were deemed applicable/ answered A high score is indicative of activity restriction						
Satisfaction with Prosthesis subscales						
<i>Aesthetic Satisfaction:</i> In Part 1 (p5) add the values of: Item <i>i</i> + Item <i>ii</i> + Item <i>iii</i> A high score is indicative of satisfaction with prosthesis						
<i>Functional Satisfaction:</i> In Part 1 (p5) add the values of: Item <i>iv</i> + Item <i>v</i> + Item <i>vi</i> + Item <i>vii</i> + Item <i>viii</i> A high score is indicative of satisfaction with prosthesis						

**TRINITY AMPUTATION AND PROSTHESIS EXPERIENCE SCALES-REVISED
(TAPES-R)
USERS' BRIEF PROJECT DESCRIPTION FORM**

*If you are intending to use the TAPES-R, we would appreciate if you would complete the following form and send it to: pamela.gallagher@dcu.ie

CONTACT DETAILS:

Name:

Organisation:

Address:

E-mail:

Telephone:

Short description of project (to include information on setting and sample):

If you have any queries on using the TAPES/TAPES-R, please contact pamela.gallagher@dcu.ie



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Department of Psychology

DUBLIN PSYCHOPROSTHETICS GROUP

www.psychoprosthetics.ie

The **Dublin Psychoprosthetics Group** is a unique multidisciplinary group of researchers and clinicians interested in applying many and varied aspects of psychology to prosthetic use, especially in regard to the rehabilitation of people with amputations. It is a co-directed project between Dublin City University, Ireland, the National University of Ireland, Maynooth and Trinity College Dublin, Ireland. Contact details for the co-directors are:

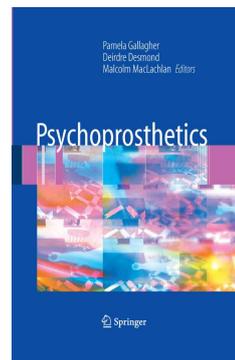
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The Dublin Psychoprosthetics Group also has many local and international associates who are leading authorities in their areas, with whom we are collaborating. A list of these collaborations and projects and a complete listing of publications and conference presentations can be found on our website (www.psychoprosthetics.ie). Some of our most recent publications include:

- Desmond, D. M., Coffey, L., Gallagher, P., MacLachlan, M., Wegener S, O'Keefe F. (In press). Limb amputation. In Kennedy, P. (ed) Oxford Handbook of Rehabilitation Psychology. Oxford University Press.
- Gallagher P, O'Donovan MA, Doyle A, Desmond D. (2011). Environmental Barriers, Activity Limitations and Participation Restrictions Experienced by People with Major Limb Amputation. *Prosthetics and Orthotics International* 35(3) 278-284.
- Schaffalitzky E, Gallagher P, MacLachlan M, Wegener S, Ryall N. (2011). Understanding the benefits of prosthetic prescription: Exploring the experiences of practitioners and lower limb prosthetic users *Disability & Rehabilitation* 33(15-16): 1314-1323
- Desmond, D. M., MacLachlan, M. (2010). Prevalence and characteristics of phantom limb pain and residual limb pain in the long term following upper limb amputation. *International Journal of Rehabilitation Research*. doi: 10.1097/MRR.0b013e328336388d
- Gallagher P, Franchignoni F, Giordano A, MacLachlan M. (2010) Trinity Amputation and Prosthesis Experience Scales: A Psychometric Assessment Using Classical Test Theory and Rasch Analysis (TAPES-R). *American Journal of Physical Medicine and Rehabilitation*. 89 (6): 487-496.
- Coffey, L., Gallagher, P., Horgan, O., Desmond, D., MacLachlan, M. (2009). Psychosocial adjustment to diabetes-related lower limb amputation. *Diabetic Medicine*, 26(10), 1063-1067.
- De Silva M, MacLachlan M, Devane D, Desmond D, Gallagher P, Schnyder U, Brennan M, Patel V. Psychosocial interventions for the prevention of disability following traumatic physical injury. *Cochrane Database of Systematic Reviews* 2009, Issue 4. Art. No.: CD006422. DOI: 10.1002/14651858.CD006422.pub3.
- MacLachlan, M., & Swatz, L. (Eds.). (2009). *Disability And International Development: Towards Inclusive Global Health*. London: Springer.
- Gallagher P, Desmond DM, MacLachlan M. (Eds.). (2008). *Psychoprosthetics: State of the Knowledge*. London: Springer-Verlag.



We are interested in facilitating colleagues who may wish to use the Trinity Amputation and Prosthesis Experience Scales-Revised (TAPES-R). This instrument is intended for clinical and research use and measures how well individuals adjust to wearing a prosthesis.

We are also interested in establishing links with colleagues in other countries, including 'developing countries', who may wish to collaborate with us on future projects.