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Table SI. Examples of application of GAS in Physical Medicine and Rehabilitation domains of practice, research and education.

PRM field	Use as an outcome measure in research	Use across clinical practice with reporting of relevance or feasibility or clinimetric qualities	Reviews, position and didactical papers on GAS
Cognitive / behavioural rehabilitation	Estival et al.(1) Krasny-Pacini et al.(2) Hamzah et al.(3)	Peters et al. (4) Hanssen et al. (5, 6) Grant et al. (7, 8) Rannisto et al. (9) Escher et al. (10)	Schlosser et al. (11) Malec et al. (12) Bouwens et al. (13)
Spasticity management	Ertzgaard et al.(14) Eftekhar et al.(15)	Ashford et al. (16, 17) Choi et al. (18) Ghroubi et al. (19) López de Munain et al. (20) Moore et al. 2018 (21)	Turner-Stokes et al. (22)
Other neurological rehabilitation	Chronic stroke : Hung et al.(23) Peirone et al.(24) Neuro-visual rehab : Elshout et al.(25) Bergsma et al. (26)	Subacute stroke intensive rehab : Jung et al. (27) Ogawa et al. (28) Chronic stroke : Abu Tariah et al. (29) Neuro-urology : Brubaker et al. (30) Multiple sclerosis : Rannisto et al.(9)	
Orthopaedic rehabilitation and pain management	Pain management : Oliver et al. (31)	Pain management : Zaza et al. (32) Orthopaedic rehab : Witjes et al.(33) Rushton et al. (34)	
Geriatric rehabilitation	Park et al.(35) Verdoorn et al. (36) van Seben et al. (37) Schnitzler (38) Dolovich et al.(39)	Herdman et al. (40) Jennings et al.(41) Moorhouse et al.(42) Javadi et al. (43) Stolee et al. (44, 44, 45)	Reuben et al. (46)
Pediatric rehabilitation	Multifaceted programs: Ghorbani et al. (47) Willis et al. (48) Schaaf et al. (49) Velasco et al. (50) Rosenberg et al.(51) Dwyer et al.(52) McLean et al.(53) Ten Berg et al.(54) Chiarello et al.(55) Schwellnus et al. (56)	Multifaceted programs: Bexelius et al. (63) Vroland-Nordstrand et al.(64) Effgen et al. (65) Buitrago 2019 (66) Casey 2017 (67) Ahl et al.(68) Ostensjø et al.(69) Gaffney et al. (70)	Harpster et al. (73) Calder et al. (74) Steenbeek et al. (75)

	<p>Early intervention : Brown 2017 (57)</p> <p>Spasticity/dystonia management : Tilton et al. (58) Bonouvrié et al.(59)</p> <p>Youth or transition: Kramer et al. (60) King et al. (61) Keenan et al. (62)</p>	<p>Early intervention : Hwang et al. (71)</p> <p>Spasticity management : Krasny-Pacini et al.(72)</p>
Education and coaching programs: for caregivers (palliative care), for students (OT)		<p>Chapleau et al. (76) Connors et al. (77) Koski et al. (78)</p> <p>Care giver coaching : Hui et al. (79)</p>
Others	<p>General inpatient rehabilitation : Churilov et al. (80)</p> <p>Drug development : Mitroui et al. (81)</p> <p>Rural-based ambulatory rehabilitation : Baggio et al.(82);</p> <p>Chronic conditions (rheumatological, neurological or medical): Guidetti et al. (83)</p>	<p>Pharmacology: Vu et al. (84)</p>

Note: papers cited in this table are not exhaustive; only most relevant examples across PRM fields are presented here.

Table III. Useful resources and methods for goal selection prior to setting goals

Goal Selection Aid	References of papers using this approach prior to creating goal attainment scales
INTERVIEWING METHODS – COMMUNICATION METHODS	
Metaphoric identity mapping	Ylvisaker et al.(85)
Motivational interviewing	Rollnick & Miller et al.(86)
SEMI-STRUCTURED INTERVIEW	
Canadian Occupational Performance Measures	Ghorbani et al. (47); Willis et al. (48); Vroland-Nordstrand et al. (64); King et al. (61); Hui et al. (79); Speth et al. (87); Calder et al. (74); Radomski (88); McLean (53); Mc Pherson et al.(89); Schwelnus et al.(56); Speth et al.(87)
Children’s Assessment of Participation and Enjoyment (CAPE) and Preferences for Activities of Children (PAC) (90)	Willis et al. (48)
Perceived Efficacy and Goal Setting System (PEGS) (91)	Vroland-Nordstrand et al. (64)
Based on the Life Goal Concept, assessed by the Rivermead Life Goal questionnaire	Ogawa et al. (28)
Routine Based Interview (RBI) (92)	Hwang et al. (71)
Client’s Intervention Priorities (CIP©)	Eduardo Cisneros et al. (93)
QUESTIONNAIRES, STANDARDISED MEASURES	
These tools are intended to better understand client difficulties and to identify therapy goals even if they were not specifically developed for this aim.	
Wheelchair Outcome Measure for Young People (WhOM-YP)	Field & Miller (94)
Dysexecutive questionnaire from Behavioural Assessment of Dysexecutive syndrome (DEX) (95)	Estival et al.(1)
Pediatric Evaluation of Disability Inventory (PEDI) (96)	Bexelius et al. (63)
In Home Occupational Performance Evaluation (I-HOPE) (97)	Dickson & Toto (98)
La Trobe Communication Questionnaire (LCQ) (99)	Finch et al. (100)
Standardised measures: - Of upper-limb spasticity - Of cognition	Turner-Stokes et al.(101)
GOALS MENUS	
GAS menu for Disorders of Consciousness	Turner-Stokes et al. (102)

GAS-eous tool for Upper limb spasticity for spastic persons (Impairments and symptoms domain; Activities and function domain)	Turner-Stokes et al. (103)
Finger deformation in older adults persons (4 goals proposed)	Schnitzler et al. (38)
GAS menu for children with dynamic equinus due to cerebral palsy	Tilton et al. (58)
List of goals categorized into four sub-domains (active function, passive function, pain and other) in a pediatric goal-centered upper limb spasticity home exercise program	Shierk et al. (104)
List of participation goals for children/youth with cerebral palsy for use in a solution-focused coaching intervention	Schwelnus et al.(56)
List of goals list for spastic paresis, goals mapped on to the WHO ICF	Turner-Stokes et al.(103); Ashford et al. (105); Choi et al. (18)
Goals list provided for Intensive acute stroke rehabilitation, in physical therapy domain and occupational therapy domain.	Jung et al. (27)
OBSERVATIONS	
Joint observation of the patient (mostly the child) between professionals and care givers	Ostensjo et al.(69)
Based on visioning video of performance	Behn et al. (106)
OTHER POTENTIAL GOAL SELECTION AIDS NOT BEEN PUBLISHED IN GAS LITERATURE (to our knowledge)	
ABILHAND-Kids; Arnould et al.(107)	
Outil Thérapeutique d'autodétermination des Objectifs Pédiatriques en Ergothérapie (OThope); Perrault (108)	
COSA (Child Occupational Self-Assessment (COSA); Kramer et al.(109)	
Paediatric Activity Card Sort (PACS); Mandich et al. (110)	
Activity Card Sort (ACS); Baum et Edwards (111)	

Table III. Negative and positive aspects of GAS application

Negative aspects of GAS
<ul style="list-style-type: none">- Time is needed to create personalized scales, 12 (112) to 49 (75) minutes per scale. To reduce time, GAS may be established by the therapist alone, lacking true collaboration with the person;- Experience and expertise is needed to predict GAS levels (27) , and training in GAS writing is recommended (14, 29, 113, 114)- Achieving your goal gives you a score of 0! This may be depressing for patients;- Cognitive and communication limitations (e.g. aphasia) and lack of insight (e.g. anosognosia) are major challenges for choosing, discussing and formulating realistic goals (115), as well as their attainment (27);- If T-scores are used, initial level has to be set on (-2) and leads to floor effect;- If T-scores are used parametric interpretation applied to ordinal data is not correct (15);- Using GAS as an outcome measure in research requires analysing, correcting, comparing the scales across groups, requiring time and resources (27)- Clinimetric qualities are highly dependent on the way GAS scales are written; therefore, clinicians, researchers, and reviewers cannot rely on published studies of metrologic qualities obtained in different studies (75, 114).
Positive aspects of GAS
<ul style="list-style-type: none">- Free to be used by anyone / multidisciplinary tool;- GAS is applicable for any goal (20, 58), with the same method applied for many unrelated goals (motor, cognitive, social etc.) Although challenging, growing literature demonstrates feasibility with cognitive impairment (116–118);- It covers domains not targeted by standardised measures (20)(119)- GAS approach is tailored to the patient’s needs/priorities (18, 27, 82, 103, 120, 121)- A partnership approach, including collaborative goal-setting with the patient motivating patients to achieve goals (17, 63, 103, 122–124) promotes therapeutic alliance (4). Patients undergoing rehabilitation are more motivated when goals are clearly defined and consistent with their life project (120);- Negotiation of realistic goals avoids potential patient deception regarding rehabilitation results (58);- When initially well-defined, GAS demonstrate no ceiling or floor effects (66, 123) and are quick to rate;- Clinimetrics: although each goal attainment scale has idiosyncratic clinimetrics, literature has shown that accurately formulated GAS scales may have adequate clinimetric properties:<ul style="list-style-type: none">o Responsiveness (sensitivity to change): 20% of GAS themes are not covered by Gross Motor Function Measure-66 (GMFM-66) or Pediatric Evaluation of Disability Inventory (PEDI)(4, 7, 14, 58, 82, 125) GAS can detect changes that are similar to caregiver reports (126)o Content validity (127);o Inter-rater reliability may be acceptable if GAS is precisely written (128);- It facilitates goal-oriented therapy, assists in structuring and focusing intervention (4);- GAS use is recognized and recommended in areas of practice (e.g. spasticity management: European consensus statement, 2009 (129).

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