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PT in School-Based Settings

Guest Editor: Lisa Kenyon, PT, DPT, PhD, PCS

Physical Therapy Virtual Conference

Mon 10/7	The Challenge of Keeping Assessments Standardized Deanne Fay, PT, DPT, PhD
Tues 10/8	School-Based Intervention for Children with Developmental Coordination Disorder or Suspected Developmental Coordination Disorder Melinda Mueller, PT, DPT, PCS & Lisa Dannemiller, PT, DSc, PCS
Wed 10/9	Goal Attainment Scaling for Simple and Medically Complex Clients in the School Setting Sarah Bengtson, PT, DPT, Paq
Thurs 10/10	Application of the ICF to the Provision of School-based Physical Therapy Services Lisa Kenyon, PT, DPT, PhD, PCS
Fri 10/11	Assistive Technology in the School Setting: Tips for Planning, Selecting and Justifying Laura Cohen, PhD, PT, ATP/SMS, RESNA Fellow

Goal Attainment Scaling in the School Setting

Examples for Simple and Medically Complex Students

Sarah Bengtson, PT, DPT
Witwer Children's Therapy Center, Unity Point Health

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Disclosures

- I have no financial or non-financial disclosures to make as a part of the CEU offering.

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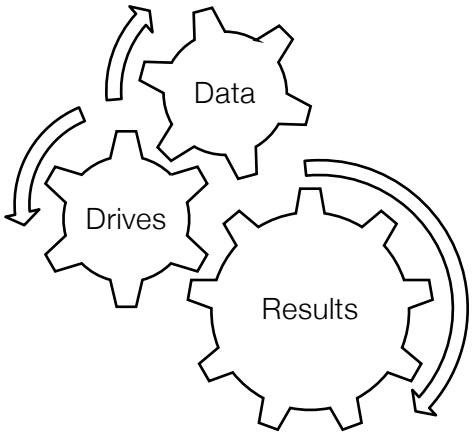
Why are we here?



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Why are we here?

- Many current outcome measures do not capture small meaningful changes as positive outcomes.
- Standardized measures lack the ability to individualize treatment planning.
- Goal Attainment Scaling may fill a gap in outcome measurement for pediatric rehabilitation programs.

6

Learning Outcomes

After this course, participants will be able to:

- Describe at least two arguments for the use of Goal Attainment Scaling as an outcome measure.
- Define common statistical terms such as mean, median, mode, standard deviation.
- Describe how to us a T-score in statistical analysis.
- List at least three strengths and weaknesses each of Goal Attainment Scaling as an outcome measure in clinical practice.
- Outline at least two ways that the GOALed APP can be used in clinical practice.
- Successfully identify a goal and scale levels from a case study for a simulated patient in a school environment.
- Appropriately score the outcome of a goal from a case study for a simulated patient in a school environment.

7

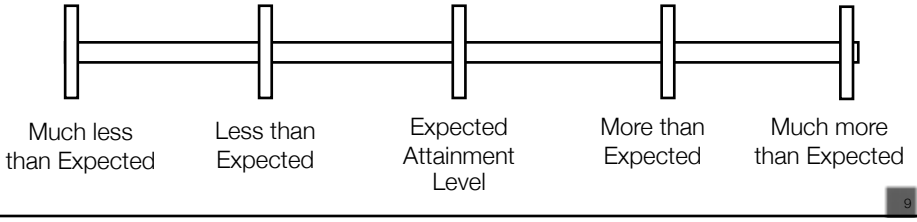
Overview and History of Goal Attainment Scaling

- Described in 1968 by Thomas Kiresuk and Robert Sherman
- Purpose was to evaluate community mental health programs
- Providers were dissatisfied with currently available tools

8

Goal Attainment Scaling (GAS)

- Criterion referenced outcome measure that involves writing very specific, measurable, and precise goals and then scaling those goals with possible levels of achievement
- Goal AND scales are written **PRE** intervention, and scored **POST** intervention



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Goal Attainment Scaling (GAS)

- Provides objective level of goal achievement.
- Process is collaborative with client and family.
- Statistics allow for comparison of sets of data

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How do we GAS?

1. Specific goals are written, based on client and family interview and focused on areas that are meaningful to the client and clinically significant
2. Goals are scaled into 5 possible levels of achievement.
3. Intervention is provided.
4. Goals are evaluated and level of attainment are assigned.

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Why GAS?

- Outcome measures drive evidence based practice.
- Important for reimbursement and justification to third party payers.
- Current standardized measure may not capture areas of meaningful change, especially for medically complex students and clients.

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Baseline: 10 minutes to walk between classes

↓

Therapy Intervention

↓

Outcome: 5 minutes to walk between classes

13

PDMS

GMFM

Wee-Fim

BOT-2

No change in these measures….<u>but did this student actually achieve something meaningful</u>?

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CONTINUED

Literature Support

- The Evaluation of Functional, School-Based Therapy Services for Children with Special Needs
  - 1998 – King et al
  - Used Goal Attainment Scaling to evaluate school therapy services
  - Involved 16 children with articulation disorders, DCD, or CP
  - Collaborative goal setting with teachers, therapists, parents, and students
  - Unique goals were set for each student
  - GAS was responsive to change and correlated with other standardized measures

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CONTINUED

Literature Support

- Student Outcomes of School Based Physical Therapy as Measured by Goal Attainment Scaling
  - 2016 - Chiarello et al
  - 296 students and 109 physical therapists participated
  - IEP goals were translated into sub goals using Goal Attainment Scaling
  - Goals were scored at the end of the year
  - GMFCS level did not affect goal attainment
  - Younger students had higher goal attainment than older students

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CONTINUED

Literature Support

- Feasibility of a shorter Goal Attainment Scaling method for a pediatric spasticity clinic – The 3-milestone GAS
  - 2017 - Krasny-Pacini et al
  - Trained therapists in GAS writing and preparing GAS scales
  - Used a shorter method with only 3 levels to evaluate goals
  - 541 goals were written and scored
  - Clinician goals had similar attainment in a 3-level vs 5-level GAS methodology

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CONTINUED

Literature Support

- Goal Attainment Scaling to Evaluate Intervention on Individual Goals for Children Born Extremely Preterm
  - 2017 – Brown et al
  - 24 4-year old children born at <28 weeks gestation
  - Used both GAS and M-ABC
  - Goals achieved above expected level were correlated with improvements in M-ABC scores

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CONTINUED

Literature Support

- Investigating a Participation-Based Friendship Intervention for Youth with Disabilities: Effects on Goal Attainment, Social Self-Efficacy, and Engagement
  - 2019 – King et al
  - Preliminary study with 5 students to develop social skills and friendships
  - Goals were achieved, and significant GAS scores correlated with significant COPM scores
  - Concluded that participation based friendship intervention can be effective in reaching social goals

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CONTINUED

Literature Support

- Goal Attainment Scaling Made Easy With an App: GOALed
  - 2019 – Gaffney et al
  - Developed an application to streamline calculations of goal attainment scale scores
  - Available for both Apple and Android
  - Has capabilities for exporting data and communicating with patients
  - Need to consider HIPPA and privacy as well as compliance rules

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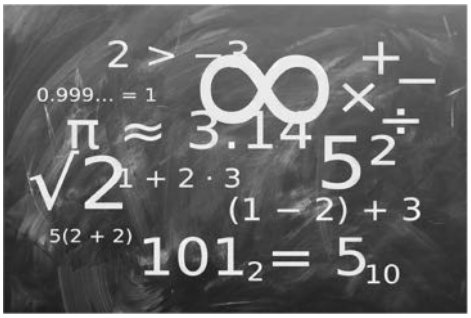

Statistics Review

Or…what we all learned in school and then promptly forgot

21

What are statistics?

- Methods and concepts that allow us to:
  1. Organize numerical information
  2. Understand analytical technique
  3. Make informed decisions about the meaning of data

22

Central Tendency

- Description of the center of a distribution of data
- Three basic descriptors
  - Mean
  - Median
  - Mode
- Mean (average)
  - $\bar{x} = \frac{\sum x_i}{n}$
  - Best used for data sets where data points are evenly distributed

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Central Tendency

- Median
  - Middle number of the data set
  - Place numbers in order:
  - 12, 14, 15, 21, 23, 24, 37, 62, 81, 84, 98
  - 14, 15, 21, 23, 24, 37, 62, 81, 84, 98
  - Odd number of points: mode is the middle number
  - Even number of points: mode is the average of the two middle numbers

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Central Tendency

- Mode – the most commonly occurring number in a data set
- 1,1,1,1,1,2,2,5,5,5,5,5,5,5,5,5,8,8,9,10
  - 1 appears 4 times
  - 2 appears 2 times
  - 5 appears 9 times
  - 8 appears 2 times
  - 9 and 10 each appear 1 time
  - Mode = 5

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Standard Deviation

- Describes variability
- $\sigma = \sqrt{\frac{\sum |x - \bar{x}|^2}{n}}$
- Usually given to us in the measures we use (yay!)
- Large standard deviation means there is a lot of variability in the data set.
- Smaller standard deviation means the data is clustered more around the central tendency

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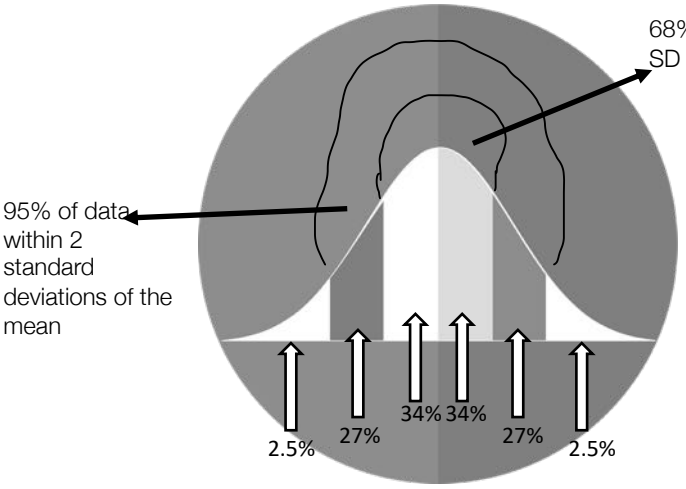
Standard deviation



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Z-Score versus T-score

Z-score

- Also known as a standard score
- Relates how far a specific raw score is from the population mean in standard deviations
- $z = \frac{(x-\mu)}{\sigma}$

T-score

- Normative standard score
- Always has a mean of 50 with a SD of 10
- Related to a z-score
- Allows standard scores from different data sets to be compared
- $T = (z \times 10) + 50$

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PDMS Example

- Child has a GMQ of 87
  - We know that the population mean of this score is 100 with a standard deviation of 15.
  - Z = (87-100)/15
    - Z = - 0.86
  - T = (-0.86X10)+50
    - T = 41.4
- Why is this useful? If you want to compare different tests with different standard deviations.

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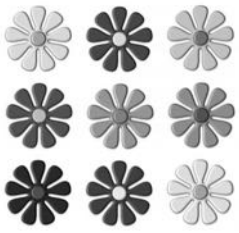
Types of data

- Non parametric
  - Nominal data - Categories of things
    - Boy/girl, color of flower, category of animal
  - Ordinal data – 1st, 2nd, 3rd



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Types of data

- Parametric
  - Data that behaves by specific rules (parameters)
  - Interval Data
    - Space between points are equal, but zero is arbitrary
      - Ex: Degrees Celsius
  - Ratio Data
    - Space between points are equal, and zero is known and has meaning
      - Ex: Length, mass

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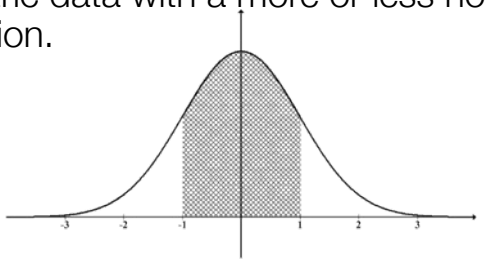
Why does that matter???

- Most of the tools we've talked about assume parametric data with a more or less normal distribution.



- Non-parametric data have their own sets of statistical tools

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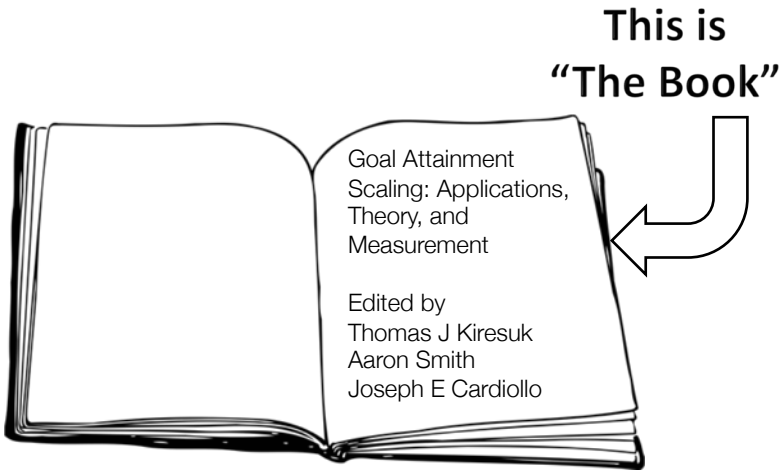
Practical Usage of GAS in Schools



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Practical Usage of GAS in Schools

- 6 steps to goal writing in GAS format:
  1. Identify where you are focusing your treatment
  2. Translate your problem areas into at least 3 goals
  3. Select an indicator or variable that you can adjust as a measure of outcome for each goal
  4. Specify the expected level of outcome for each goal
  5. Specify the more than expected and less than expected levels of outcomes
  6. Specify the much more and much less levels of outcome for each goal

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Patient examination

- Student and family interview
- Baseline functional data
- Standardized tests and measures
- Identification of areas of priority by the student and family



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SMART Goals

- S: Specific
- M: Measurable
- A: Attainable
- R: Relevant
- T: Timely

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GAS Goal Example

- Remember our case of the child who wants to decrease her passing time between classes to 5 minutes to get between classes?
- What is a SMART goal?
  - "After 3 months of therapy intervention, the student will walk with her forearm crutches a distance of 500' in 5 minutes independently to be able to move between classes during a standard middle school passing time."

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But wait, I already write goals like this. Why is this different?

- At the end of a plan of intervention, or at an IEP meeting, most of the time goals are reported as "Met", "Not Met", "Progressing" or other similar descriptors.
- Useful information, but not quantitative
- Doesn't allow for comparison to any type of mean or give any information about the quality of the performance

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Pre-intervention Scaling

- What makes GAS different
- Variables for improvement are identified and possible levels of achievement identified.
- Expected level of achievement is identified, along with 2 levels on each side:
  - Much more than expected
  - More than expected
  - Less that expected
  - Much less than expected

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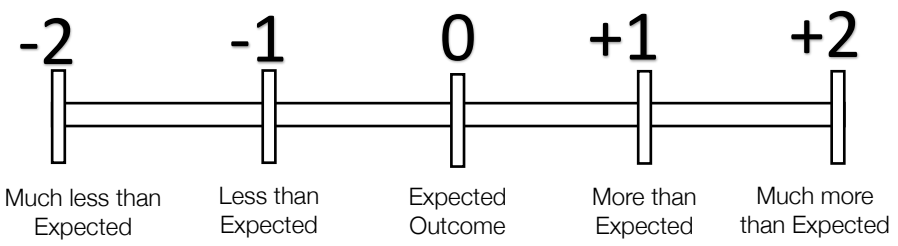

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Level of Attainment	Goal: "Student will walk 500' with her forearm crutches in 5 minutes independently."
-2: Much less than expected	10 minutes
-1: Less than expected	7.5 minutes
0 : Expected Level	5 minutes
+1: More than Expected	2.5 minutes
+2: Much more than expected	1 minute

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Goal, then scale, what next?

- Therapy intervention is completed.
- Student is tested to determine her level of achievement.
- Who does the testing?
  - Outside rater = minimize bias in testing (not always feasible)
  - Must be a skilled clinician, cannot be delegated to office staff, unskilled aides, or parent report

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How did she do?

- Student walked the distance in 4 minutes and 45 seconds.
- Score = 0
- Change score for this goal is “0” because she met the expected level but not quite the “More than expected level.”

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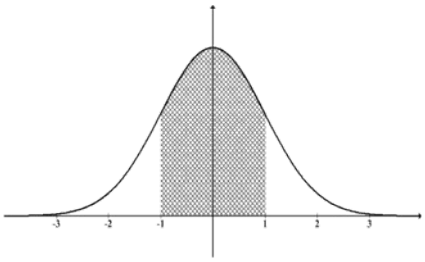
GAS depends on the T-score

- Remember a T-score is a normalized standard score.
- Mean = 50 and standard deviation is 10
- **This student’s T-score for one goal is 50**



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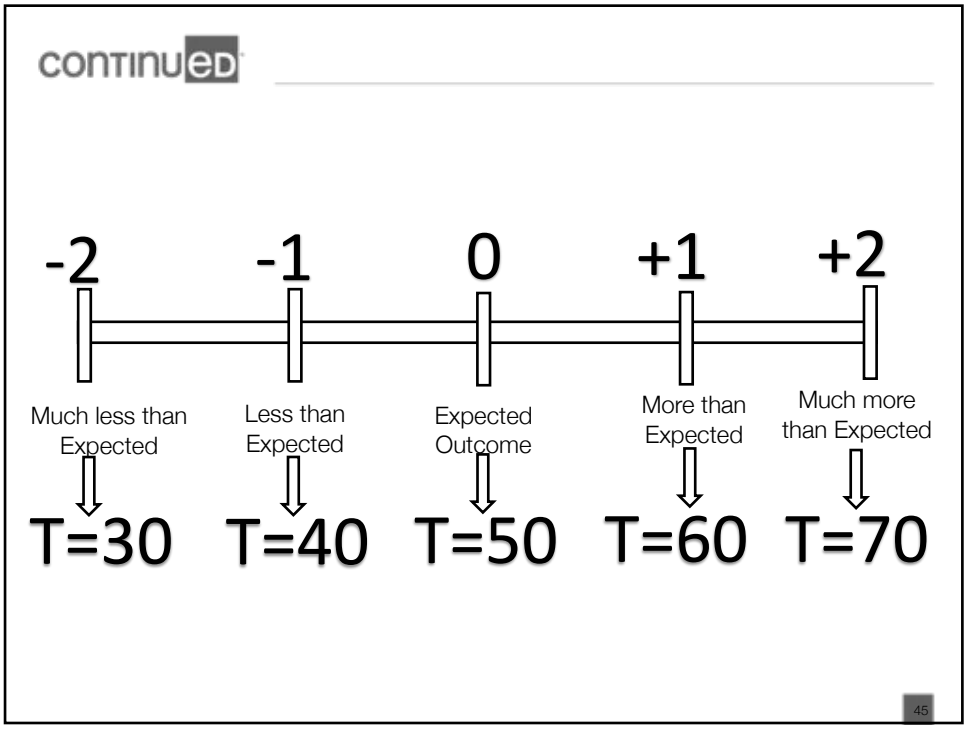

GAS as an Outcome Measure

- Consider our student from before…
- Assume she had 5 goals
- Two she met (0)
- One she did better than expected (+1)
- One she did a lot better (+2)
- One she had no change (-2)
- Is her overall progress greater or less than expected??

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GAS as an Outcome Measure

- Sum all of the change scores for the student you are evaluating.
- Student in our example: 0+0+1+2-2= **+1**
- Formula for aggregate T-score developed by Kiresuk and Sherman
  - $T = 50 + \frac{10 \sum w_i x_i}{\sqrt{(1-\rho)\Sigma w_i^2 + \rho(\sum w_i)^2}}$

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GAS as an Outcome Measure

- Luckily….you shouldn't ever have to calculate out your own aggregate T-scores
- Necessary if you are weighting goals one more strongly than another (research)
- With equal goal weights, you have two other options:
  - Tables published in Kiresuk et al (1994)
  - GOALed app

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CONTINUED

GAS as an Outcome Measure

Sum of Scaled Scores	Average Scale Score	T-score
-5	-1.00	34.92
-4	-0.8	37.94
-3	-0.6	40.95
-2	-0.4	43.97
-1	-0.2	46.98
0	0	50.00
+1	+0.2	53.02
+2	+0.4	56.03
+3	+0.6	59.05
+4	+0.8	62.02
+5	+1.0	65.08

Adapted from Kiresuk et al (1994) pg 276

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CONTINUED

GAS as an Outcome Measure

- Remember our student with 5 goals?
- Remember that she met 4 goals, and didn't meet one
  - Two she met at the expected level of change (0)
  - One she did a little better than expected (+1)
  - One she did a lot better than expected (+2)
  - One she made no change from baseline (-2)
- Aggregate change score was +1 (add all 5 scores together)

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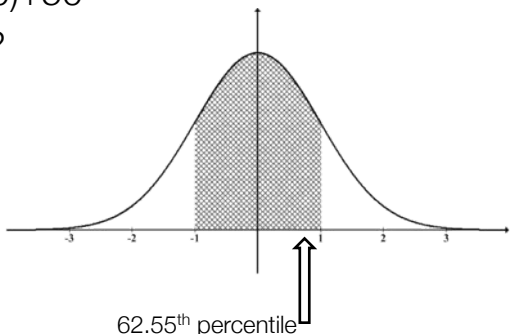
CONTINUED

GAS as an Outcome Measure

- Using the table we saw before we find her aggregate T-score to be 53.02.
- Remember, T=(z x10)+50
- What is her z-score?
  - 53.02 = (zX10)+50
  - Z = 0.302



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GOALed App
Another Way to Calculate Data

- Created by Kevin Gaffney and colleagues
- Described in 2019 in a Special Communication article in Pediatric Physical Therapy
- Available for free from Google Play and Apple App Store
- Uses same calculations as the Kiresuk tables

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CONTINUED

GOALed App

- Benefits
  - Speed
  - Data storage
  - Ability to share information with families via text and email
  - Ability to export data to MS Excel files
- Considerations
  - Privacy and security
  - HIPPA

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CONTINUED

Common errors in GAS

- Vague wording
  - Using terms like “satisfied”
  - Goals that are difficult to define
- Overlapping attainment levels
  - Goal: Child will try 4 new foods
    - -2= 0-2 new foods
    - -1= 2-3 new foods
    - 0=4 new foods
    - +1= 5-6 new foods
    - +2=7 new foods

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CONTINUED

Common errors in GAS

- Gaps in attainment levels
  - Goal – Child will initiate conversation 5 times during a class period
  - Scale: -2=0-1 times, -1 = 3-4 times 0=5 times, +1=6-7 times, +2=8 or greater times
  - What if the child initiates 2 times?

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CONTINUED

Common errors in GAS

- Multiple variables
  - Consider a child who requires minimal assistance to use a walker to walk 50'
  - If a goal is written to walk 100' with LCA and a walker, what variable are you targeting?

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Common errors in GAS

- Changing more than one variable in scaling
  - Can be done, but you only one variable per scale level

Attainment Level	Scale Criteria
-2	Walk 50' with minimal assistance
-1	Walk 50' with LCA
0	Walk 50' with SBA
+1	Walk 50' independently
+2	WHAT GOES HERE?

Options – increase distance, change variability, some other variable

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Common errors in GAS

- Setting attainment levels too high
  - Amount of change seen may not look significant when it actually was
  - Program may appear ineffective when it was not
- Setting attainment levels too low
  - Student may appear to make significant progress when it is actually average

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CONTINUED

Common errors in GAS

- Why do these errors occur?
  - Inexperienced clinicians
  - Inexperience using GAS as a method for goal writing
  - Desire to influence outcome results
- How are they prevented?
  - Training
  - Oversight
  - Auditing
  - Goal banks
  - Independent reviewing

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CONTINUED

So you want to GAS… What do you need?

- Reference text such as Goal Attainment Scaling: Application, Theory, and Measurement
  - Thomas J. Kiresuk, Aaron Smith, and Joseph Cardillo (1994)
- Online resources
  - Resource manual by Janette McDougall, PhD and Gillian King, PhD (2007)
  - "Goal Attaintment Scaling (GAS) in Rehabilitation, A practical guide." Professor Lynne Turner-Stokes DM FRCP (2009)
- GOALed app or other software

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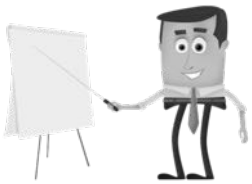
Training

- Training is the major resource consideration
- 1.5 hours for all clinicians involved in writing or scoring GAS goals
- 12.5 hours of supervised goal writing practice
- Continual auditing and programming for improvement



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How can GAS be used?

- Assess goal attainment of an individual student
- Assess goal attainment across many students with similar diagnoses
- Compare results from one clinic to another
- Compare results of one therapist to another
- Overall program evaluations

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Strengths of GAS

- Student and family centered
- Encourages goals to be specific and measurable
- Focus therapy intervention

63

Weaknesses of GAS

- Potential for bias
- Time and training required
- Questions about reliability and validity

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Minimizing bias

- Separate goal writers and evaluators
- Collaborative goal setting and scoring
- Checklist and periodic audits

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Minimizing Bias

Each scale must meet the following criteria:

Criteria	Criterion Met	Criterion Not Met	Comments
Amount of change between levels is clinically important.			
There are approximately equal intervals between levels.			
There is a set time period for goal achievement.			
Scale reflects a single variable of change (or each level reflects a single variable)			

Adapted from McDougal & King 2007

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Minimizing Bias

Each level on the scale must meet the following criteria:

Criteria	Criterion Met	Criterion Not Met	Comments
Be written in concrete behavioral terms			
Specify an observable behavior			
Be written in present tense			
Be achievable or realistically possible			

Adapted from McDougal & King 2007

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Case #1

- Sally is an 8 year old girl attending public school.
  - Diagnosis of Cerebral Palsy
  - Uses an AAC device for communication
  - Uses a walker for short distance ambulation
  - Uses a power wheelchair for most mobility
  - Requires minA of one adult for stand pivot transfers to and from her walker
  - Requires maxA of 2 adults for stand pivot transfers to and from the toilet

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Case #1

- You are a PT on Sally's IEP team.
  - What information do you need to be able to choose goals?
  - What goals might you write?
  - What measure of success would you use?
  - How would you scale the levels?

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Case #1

- What is important to Sally?
- What is her baseline level of function?
- What to you predict she can achieve with intervention?

70

Case #1

- "After 6 months of intervention, Sally will complete a stand pivot transfer between her power wheelchair and the toilet with moderate assistance of one person."

71

Case #1

Attainment Level	Scale Criteria
-2	Complete pivot transfer with maxA of 2 caregivers
-1	Complete pivot transfer with maxA of 1 caregiver
0	Complete pivot transfer with modA of 1 caregiver
+1	Complete pivot transfer with mina of 1 caregiver
+2	Complete pivot transfer with LCA of 1 caregiver

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Remember…

- The goal is the "expected level" (0 level)
- -2 is generally the baseline level of performance
  - If regression is expected, then -1 may be baseline
- Scales must be clinically relevant/meaningful
- Only change one variable per scale
- You cannot modify a variable you haven't tested at baseline

73

Case #2

- Arthur is a 15 year old with ataxia
  - Difficulty with both static and dynamic balance.
  - Able to stand for up to 1 minute without support
  - Very limited balance reactions.
  - He uses a reverse walker for most ambulation within his school environment.
  - He has a 1:1 aide during the day and uses a medical stroller when he is fatigued.
  - He had a serious fall last year on the stairs at school and since then has been afraid to use the stairs to go to the second floor of his high school building.

74

Case #2

- He currently requires modA of 1 person to climb 8 stairs with a railing and requires nearly 10 minutes to complete this task.
- He has a history of seizures and difficulty with vision.
- He loves baseball and anything related to sports.

75

Case #2

- What more do you need to know to be able to create meaningful goals?

76

Case #2

- After interview with Arthur, you determine three areas that he would like to improve:
  1. His ability to regain his balance when bumped in the hallway.
  2. His speed of stair climbing.
  3. His ability to navigate the lunchroom with his walker.

77

Case #2

- Baseline testing:
  - Arthur can regain his balance in a controlled environment with a small perturbation 50% of the time.
  - He climbs 8 stairs with modA in 10 minutes.
  - He requires nearly constant verbal cues from his aide to navigate obstacles in the lunchroom (10 cues from the door to the table).
- How might you write goals for Arthur?

78

Case #2

- After 6 months of therapy intervention:
  - Arthur will regain his balance after a small perturbation in a controlled environment 100% of trials.
  - Arthur will climb 8 stairs with modA of one caregiver in 5-6 minutes.
  - Arthur will navigate the lunchroom from the door to the table with 5-6 cues from his associate.

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Case #2

Scale level	Balance recovery after small perturbation on 100% of trials	8 stairs with modA in 5-6 minutes	Navigate lunchroom from with 5-6 verbal cues
-2	50% of trials	modA in 9-10 minutes	9-10 cues
-1	75% of trials	modA in 7-8 minutes	7-8 cues
0	100% of trials	modA in 5-6 minutes	5-6 cues
+1	Moderate perturbation, 50% of trials	modA in 3-4 minutes	3-4 cues
+2	Moderate perturbation, 75% of trials	modA in 1-2 minutes	1-2 cues

80

Case #2

- Post intervention
  - Arthur is able to regain his balance given a small perturbation in a controlled environment on 100% of trials.
  - Completes 8 stairs in just over 3 minutes.
  - Navigates lunch room with 1-2 cues from associate
- How does he score?

81

Case #2

- Goal 1: 0
- Goal 2: +1
- Goal 3: +2
- Total change change score is +3.

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Sum of Scale Scores	Average Scale Sccore	T-score
-6	-2.00	22.62
-5	-1.67	27.18
-4	-1.33	31.74
-3	-1.00	36.31
-2	-0.67	40.87
-1	-0.33	45.44
0	0	50.00
+1	+0.33	54.56
+2	+0.67	59.13
+3	+1.00	63.69
+4	+1.33	68.26
+5	+1.67	72.82
+6	+2.00	77.38

Kiresuk, Smith, Cardillo, page 275

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Case #3

- Alice is a 4-year-old student who was involved in an MVA at 18 months of age resulting in a C2/C3 complete spinal cord injury.
  - Mechanical ventilation 24 hours/day
  - Suctioning of airway secretions approximately every 15 minutes during the school day
  - Requires repositioning in her wheelchair up to 10 times per hour (every 5-6 minutes).
  - Uses a prone stander for weightbearing time during class time, and tolerates up to 5 minutes at a time.
  - Learning power mobility, can make right turns independently and can make left turns approximately 50% of trials

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Case #3

- Family goals:
  - Go on more field trips with her class (constant need for suctioning and repositioning makes this difficult)
  - Be at eye level with her classmates during center play and would like her to be able to use her stander for longer periods of time.

85

Case #3

- Goal #1: Alice will manage her secretions, requiring suctioning 2x/hour.
- Goal #2: Alice will be well positioned in her wheelchair, requiring repositioning by staff every 15 minutes.
- Goal #3: Alice will tolerate use of her prone stander without adverse vital signs for 15 minutes.

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Case #3

Scale level	Suctioning 2x/hour	Repositioning in w/c every 15 minutes	Prone stander 15 minutes
-2	4x	Every 5-9 minutes	5-9 minutes
-1	3x	Every 10-14 minutes	10-14 minutes
0	2x	Every 15-19 minutes	15-19 minutes
+1	1x	Every 20-24 minutes	20-24 minutes
+2	<1 time	Every 25 minutes or more	25 minutes or more

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Case #3

- At the end of your therapy intervention:
  - Rarely needs suctioning (yay!)
  - She is able to use her stander for over 30 minutes playing with her friends (yay!)
  - Needs to be repositioned every 5 or 6 minutes in her wheelchair.

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Case #3

- Goal 1: +2
- Goal 2: -2
- Goal 3: +2
- Total change score = +2. T-score 54.56.
- Interpretation: Goals met at the expected level of performance.
- What about driving? Why didn't we set a w/c goal?

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Case #4

- Goal Attainment Scaling for Program Evaluation
  - 8 students assigned to 2 conditions, each with 2 goals
  - Was one approach better than the other?
  - If both groups make progress, how do we know if one was better?

90

Case #4

	Goal 1	Goal 2
Patient 1	+2	+2
Patient 2	-2	-1
Patient 3	0	0
Patient 4	-1	+1

+1

	Goal 1	Goal 2
Patient 1	0	0
Patient 2	+2	-1
Patient 3	+2	+2
Patient 4	+1	-1

+5

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Case #4

Sum of Scale Scores	Average Scale Score	T-score
0	0	50.00
+1	+0.13	52.01
+2	+0.25	54.02
+3	+0.38	56.02
+4	+0.50	58.03
+5	+0.63	60.04

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Case #4

- Both groups made progress
- Intervention group scored 1 standard deviation above what would be the expected level of change
- Control group scored at the expected level of change (or slightly higher)
- Is it significant?
  - Need other statistics to determine

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More GAS Goal Examples

Attainment Level	Scale
-2	The baby is able to lift his head when attempting to roll from supping to prone over his left side.
-1	The baby is able to roll half way from supine to prone over his left side.
0	The baby is able to roll from supine to prone over his left side.
+1	The baby is able to roll from supine to prone and half way back to supine over his left side.
+2	The baby is able to roll from supine to prone and back to supine over his left side

McDougal & King 2007, pg 19

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More GAS Goal Examples

Attainment Level	Scale
-2	Student walks with walker from library to classroom in 6 minutes, with supervision and verbal cues.
-1	Student walks with walker from library to classroom in 4-5 minutes, with supervision and verbal cues.
0	Student walks with walker from library to classroom in 3 minutes or less, with supervision and verbal cues.
1	Student walks with walker from library to classroom in 3 minutes or less, with supervision and no verbal cues.
2	Student walks with walker from library to classroom in 3 minutes or less independently (no supervision or cues).

McDougall & King, 2007 pg 20

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More GAS Goal Examples

Attainment Level	Scale
-2	Student takes part in gym class for 10-14 minutes with SBA.
-1	Student takes part in gym class for 15-19 minutes with SBA.
0	Student takes part in gym class for 20-24 minutes with SBA.
1	Student takes part in gym class for 25-29 minutes with SBA.
2	Student takes part in gym class for 30 minutes or more with SBA.

McDougall & King, 2007 pg 21

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Summary

- GAS can be used as a valid outcome measure in pediatric rehabilitation, including the school setting
- Individualized and identifies meaningful change
- Goals are written and scaled into 5 possible levels of attainment on a pre intervention basis

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Summary

- Statistical measures are used to determine significance of scores
- Change scores are aggregated together to produce a T-score with a mean of 50 (expected level of change) and a standard deviation of 10

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Summary

- Strengths/Advantages of GAS
  - Student and family centered goal writing
  - Individualized outcome measure
  - Goals are specific and measurable
  - Provides focus for therapy interventions on items of importance to the student and family
- Weaknesses/Limitations of GAS
  - Potential for bias
  - Time consuming, requires significant training
  - Questions regarding validity and reliability

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Summary

- Implementation needs
  - Textbook and training materials
  - Software (Excel, GOALed app, other statistical software)
  - Time allotment for staff training and practice

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Summary

- Common goal writing errors can be avoided with training
  - Vague writing
  - Overlapping levels
  - Gaps in levels
  - Multiple variables changing within a level

10

Summary

- Goal Attainment Scaling can be used to:
  - Evaluate a student's performance
  - Compare outcomes between therapists
  - Compare outcomes between diagnoses
  - Compare outcomes between programs

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Resources

- See reference list for references
- Resource Book/Training Manual:
  - http://elearning.canchild.ca/dcd_pt_workshop/assets/planning-interventions-goals/goal-attainment-scaling.pdf
- GOALed App
  - https://apps.apple.com/us/app/goaled/id1224376342

Physical Therapy Virtual Conference

Mon 10/7	The Challenge of Keeping Assessments Standardized Deanne Fay, PT, DPT, PhD
Tues 10/8	School-Based Intervention for Children with Developmental Coordination Disorder or Suspected Developmental Coordination Disorder Melinda Mueller, PT, DPT, PCS & Lisa Dannemiller, PT, DSc, PCS
Wed 10/9	Goal Attainment Scaling for Simple and Medically Complex Clients in the School Setting Sarah Bengtson, PT, DPT, Paq
Thurs 10/10	Application of the ICF to the Provision of School-based Physical Therapy Services Lisa Kenyon, PT, DPT, PhD, PCS
Fri 10/11	Assistive Technology in the School Setting: Tips for Planning, Selecting and Justifying Laura Cohen, PhD, PT, ATP/SMS, RESNA Fellow