

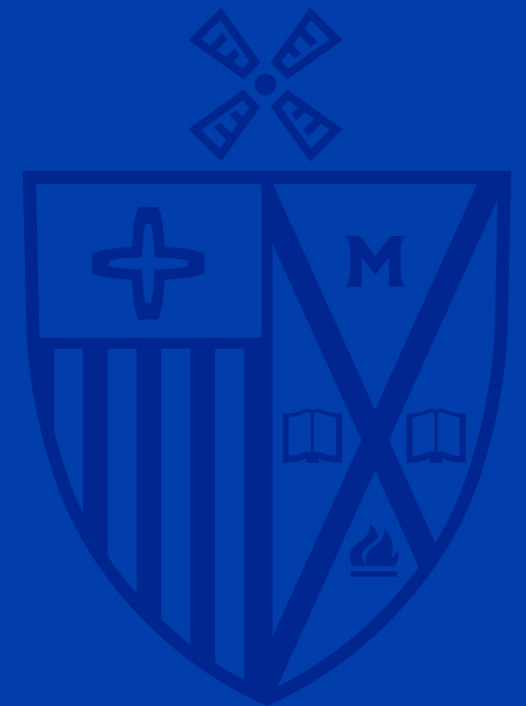
M MERCY UNIVERSITY

Building resilient minds: nurturing success through
mental toughness and health science reasoning
assessments in students

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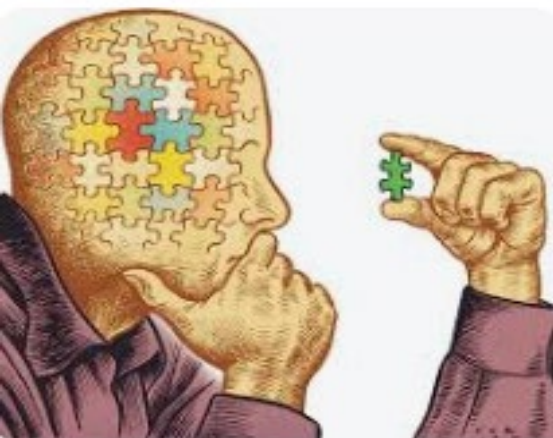
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How do we identify the specific challenges of our students?

Interventions need to be targeted

1. Heath Science Reasoning Test (Insight Assessment)
 - Core reasoning skills for clinical problem-solving
2. California Critical Thinking Disposition Inventory (Insight Assessment)
 - Mindset attributes of critical thinkers
3. Mental Toughness Questionnaire (AQR International)
 - Characteristics of ability to actively cope and problem-solve in challenging situations





Health Science Reasoning Test: Insight Assessment

- Core reasoning skills required for clinical reasoning for individuals and groups

METRICS

Metrics include scores for 8 critical skills, plus an OVERALL rating. Population percentile scores are available for benchmarking.

- **OVERALL Critical Thinking Skills**– Sustained use of critical thinking to form reasoned judgments
- **Analysis** – Accurate identification of the problem and decision-critical elements
- **Interpretation**: Discovering and determining significance and contextual meaning
- **Inference** – Drawing warranted and logical conclusions from reasons and evidence
- **Evaluation** – Assessing credibility of claims and the strength of arguments
- **Explanation**: Providing the evidence, reasons, assumptions, or rationale for judgments and decisions
- **Induction** – Reasoned judgment in ambiguous, risky, and uncertain contexts
- **Deduction** – Reasoned judgment in precisely defined, logically rigorous contexts
- **Numeracy** – Sustained use of critical thinking skills in quantitative contexts (quantitative reasoning)

Source: <https://insightassessment.com/iaproduct/health-science-reasoning-test/>



Critical Thinking: Insight Assessment

California Critical Thinking Disposition Inventory

METRICS

CCTDI provides seven mindset attributes needed by the critical thinker. Items are drawn from a scientifically developed and tested item pool.

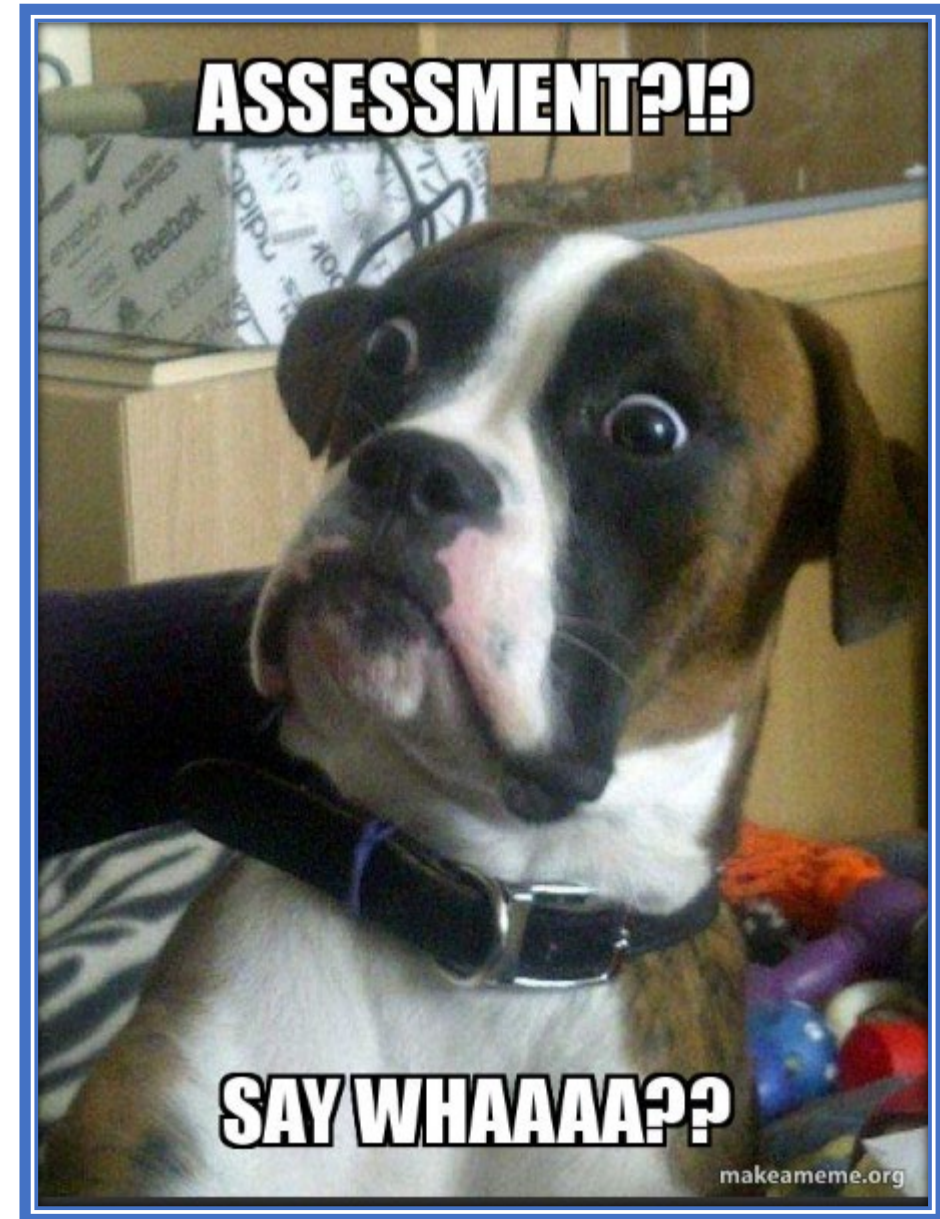
- **Truth-seeking:** Courage to follow reasons and evidence wherever they lead
- **Open-mindedness:** Willingness to consider a variety of alternative opinions
- **Analyticity (Foresight):** Consistent effort to anticipate consequences
- **Systematicity (Focus):** Habit of taking an orderly and organized approach to problem-solving
- **Confidence in Reasoning:** Disciplined reliance on well-reasoned judgment
- **Inquisitiveness:** Continuous attention to and desire for learning
- **Cognitive Maturity:** Expectation of making timely, well considered judgments

Source: <https://insightassessment.com/iaproduct/california-critical-thinking-disposition-inventory/>

Insight Assessment

Reporting

- Available immediately and reports include group and individual
 - Can choose to allow test takers to view results or hide them
 - Students provided results immediately if set to allow them to view
 - Can customize demographics
 - Specific class/section, semester, age, gender, ethnicity, declared major
 - Results stored on database
 - Administrator can email results at any time from website



The Delphi Report 1990

- Defines critical thinking as "purposeful, self-regulatory judgment – the cognitive process that uses analysis, interpretation, explanation, inference, evaluation, and reflective self-correction, by which people – individually or thinking and working together – decide what to believe or what to do."
- ..."essential as a tool of inquiry, problem-solving, decision-making, and learning."
- "The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit."

<https://insightassessment.com/iaresource/the-delphi-report-a-statement-of-expert-consensus-on-the-definition-of-critical-thinking/>

HRST and CCTDI Assessment in the Health Sciences

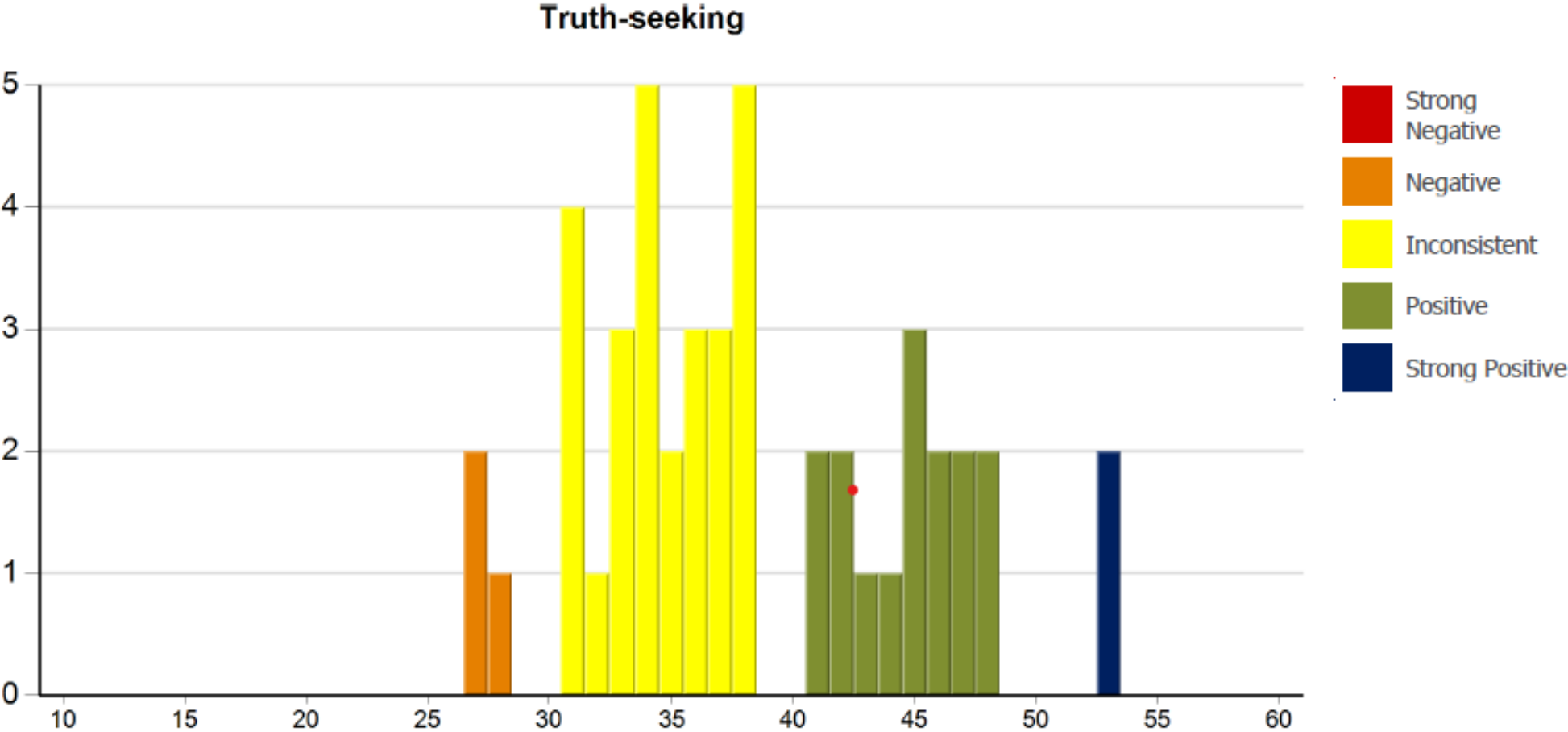
PROGRAM COMPLETION AND PROFESSIONAL LICENSURE – INDEPENDENT RESEARCH

Assessment	Citation	Findings
HSRT	The influence of critical thinking skills on performance and progression in a pre-registration nursing program. Pitt V, et al, Schools of Nursing, Midwifery and Psychology, University of Newcastle, Australia. Nurse Educ Today. 2015 Jan;35(1):125-31. Australia	Nursing: There was a significant relationship between critical thinking scores, academic performance, and students' risk of failing, especially in the first semester of study. Critical thinking scores were predictive of program completion within three years.
HSRT and CCTDI	Impact of Students' Strengths, Critical Thinking Skills and Disposition on Academic Success in the First Year of a PharmD Program. Comer RD, Schweiger TA, & Shektib P. 2019. Am J Pharm Educ 83(1) 6499. USA	Pharmacy: A CCTDI overall mean score was used to evaluate performance in pharmacy school and was predictive of GPA in the first three professional years of pharmacy school.
HSRT	Exploration of Relationships Among the Health Sciences Reasoning Test, the National Physical Therapy Licensing Examination, and Cognitive Admission Variables. Huhn K & Parrott JS. J. Phys. Ther. 2016, 31(1). USA	Physical Therapy: HSRT improved prediction of NPTE scores over that of a similar model without the HSRT. The HSRT may prove to be a valuable tool for predicting success in Doctor of Physical Therapy programs, especially for applicants whose GRE and undergraduate GPA scores are marginal.

<https://insightassessment.com/iaresearch/program-completion-and-professional-licensure-independent-research/>

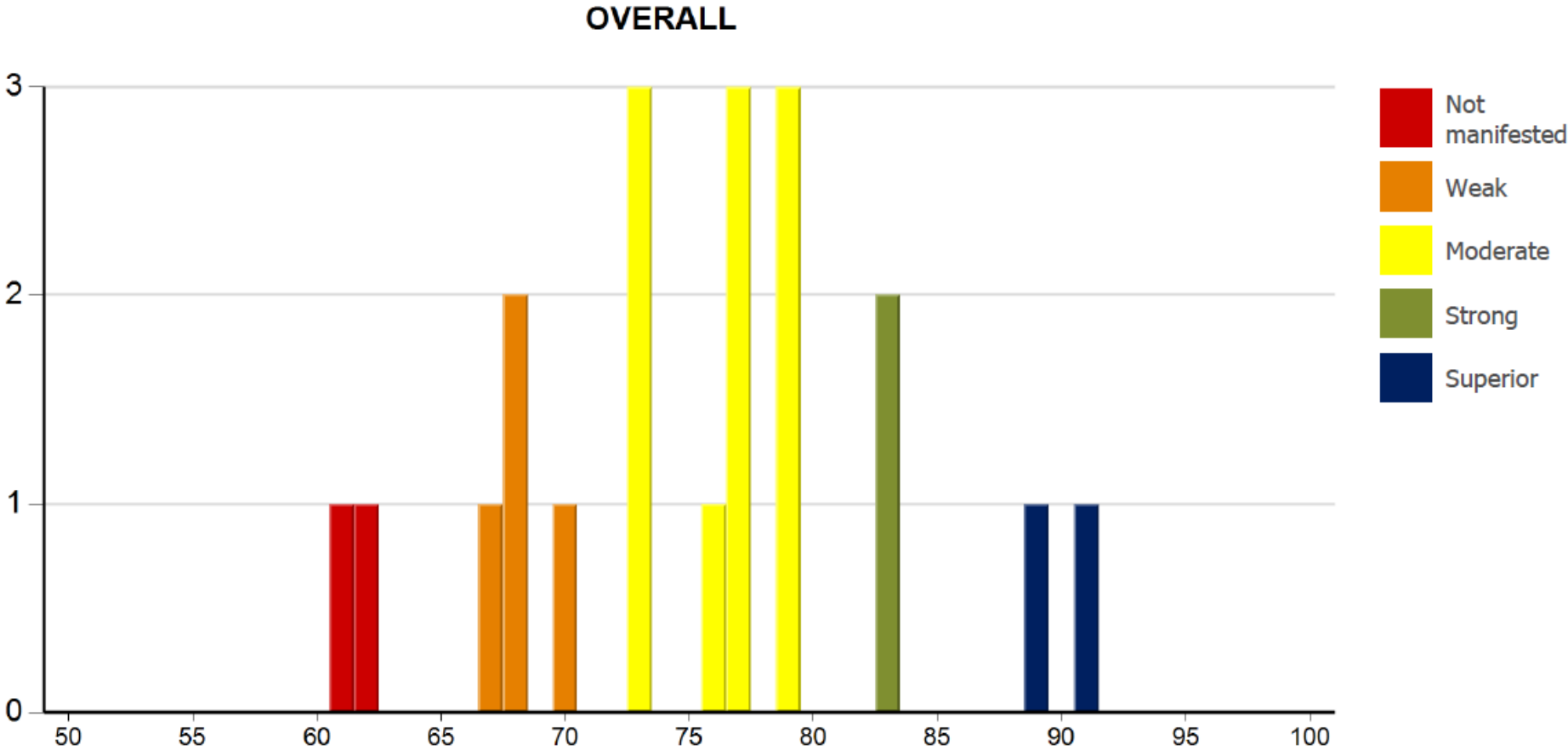
Reporting: Insight Assessment

California Critical Thinking Disposition Inventory Assessment



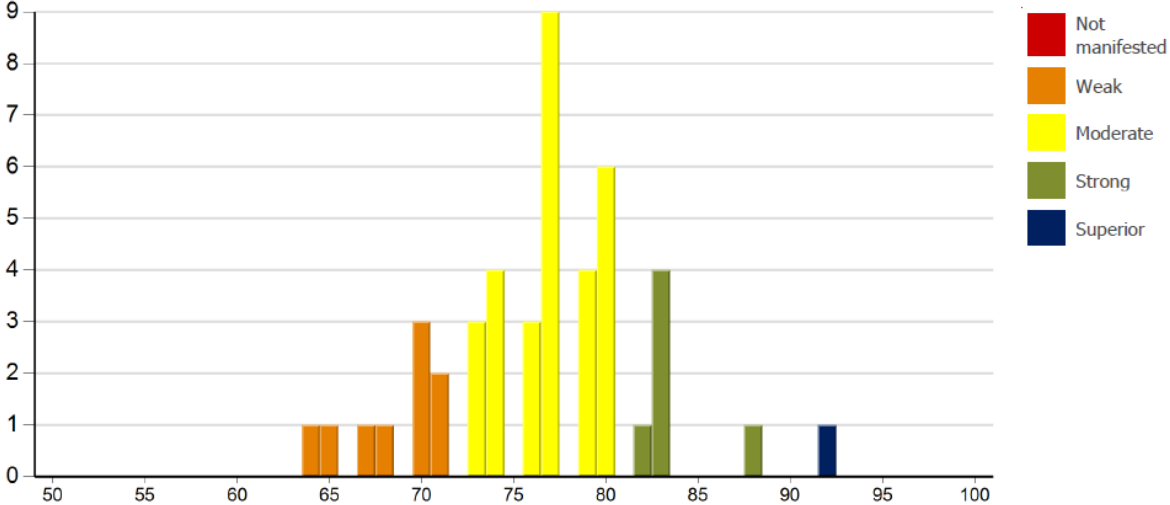
Reporting: Insight Assessment

Health Science Reasoning Test



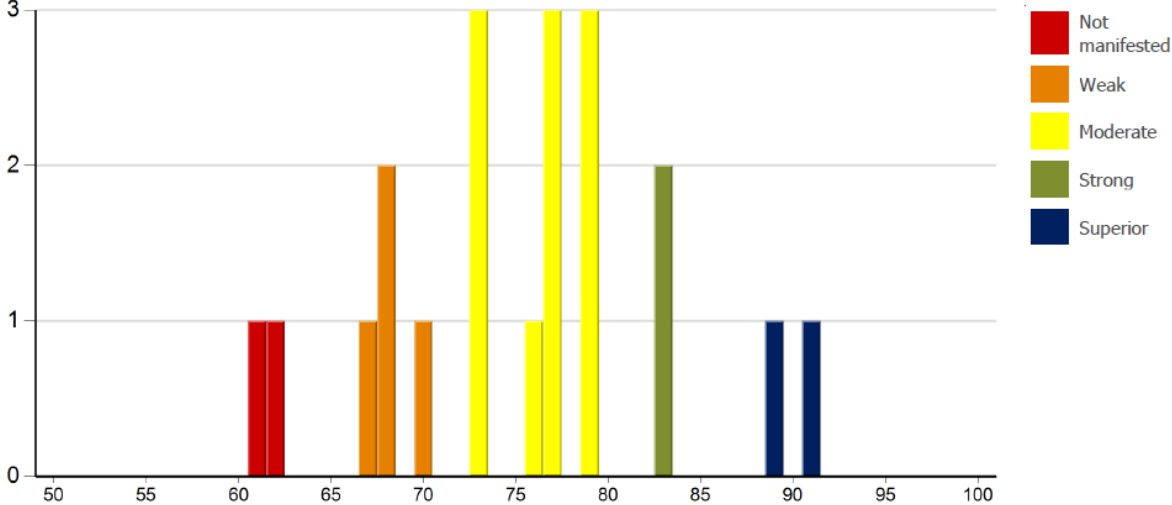
Health Science Reasoning Test

OVERALL



Spring 2019
Ave = 74.19444

OVERALL



Spring 2024
Ave = 71.80114

Health Science Reasoning Test

Unsuccessful students in VETC 101 (DFW)

	Analysis	Interpretation	Inference	Evaluation	Explanation	Induction	Deduction	Numeracy
Spring 2019	73.08	69.16	73.84	66.56	78.52	79.92	68.36	67.6
Spring 2024	65.33	56	64.67	59.67	59.67	69	60.67	61.33

Discovering and determining significance and contextual meaning

Assessing credibility of claims and the strengths of arguments

Providing the evidence, reasons, assumptions, or rationale for judgements and decisions

Reasoned judgement in precisely defined, logically rigorous contexts

Sustained use of critical thinking skills in quantitative contexts

California Critical Thinking Disposition Inventory

Unsuccessful students in VETC 101 (DFW)

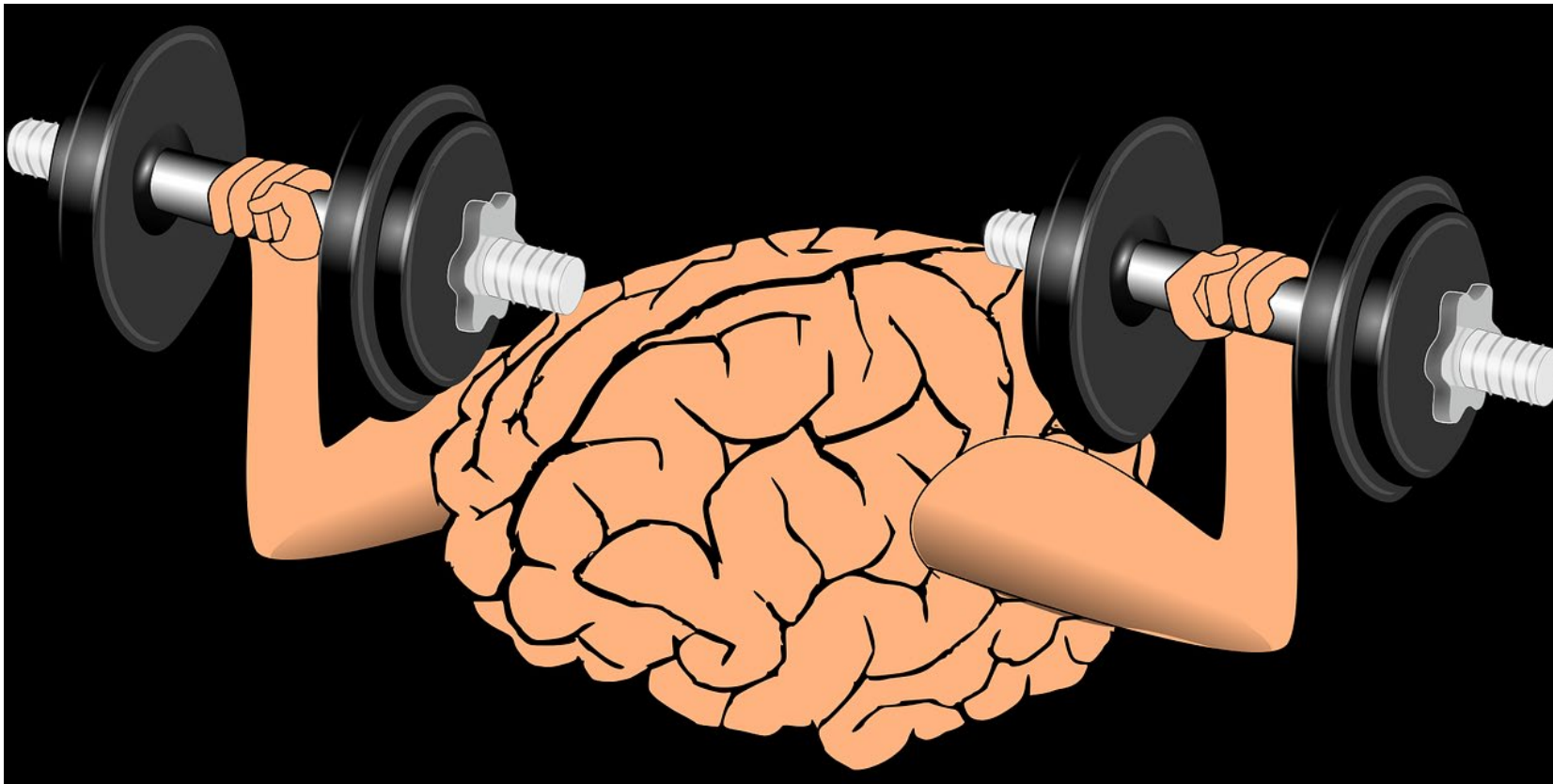
	Truth Seeking	Open mindedness	Inquisitiveness	Analyticity	Systematicity	Confidence in reasoning	Cognitive maturity
Spring 2019	36.4	43	49.56	45.16	43.24	45.76	41.36
Spring 2024	31	38.67	44.33	37.67	35.33	41	33.67

Courage to follow evidence and reasons wherever they lead

Expectation of making timely, well considered judgements

Mental Toughness

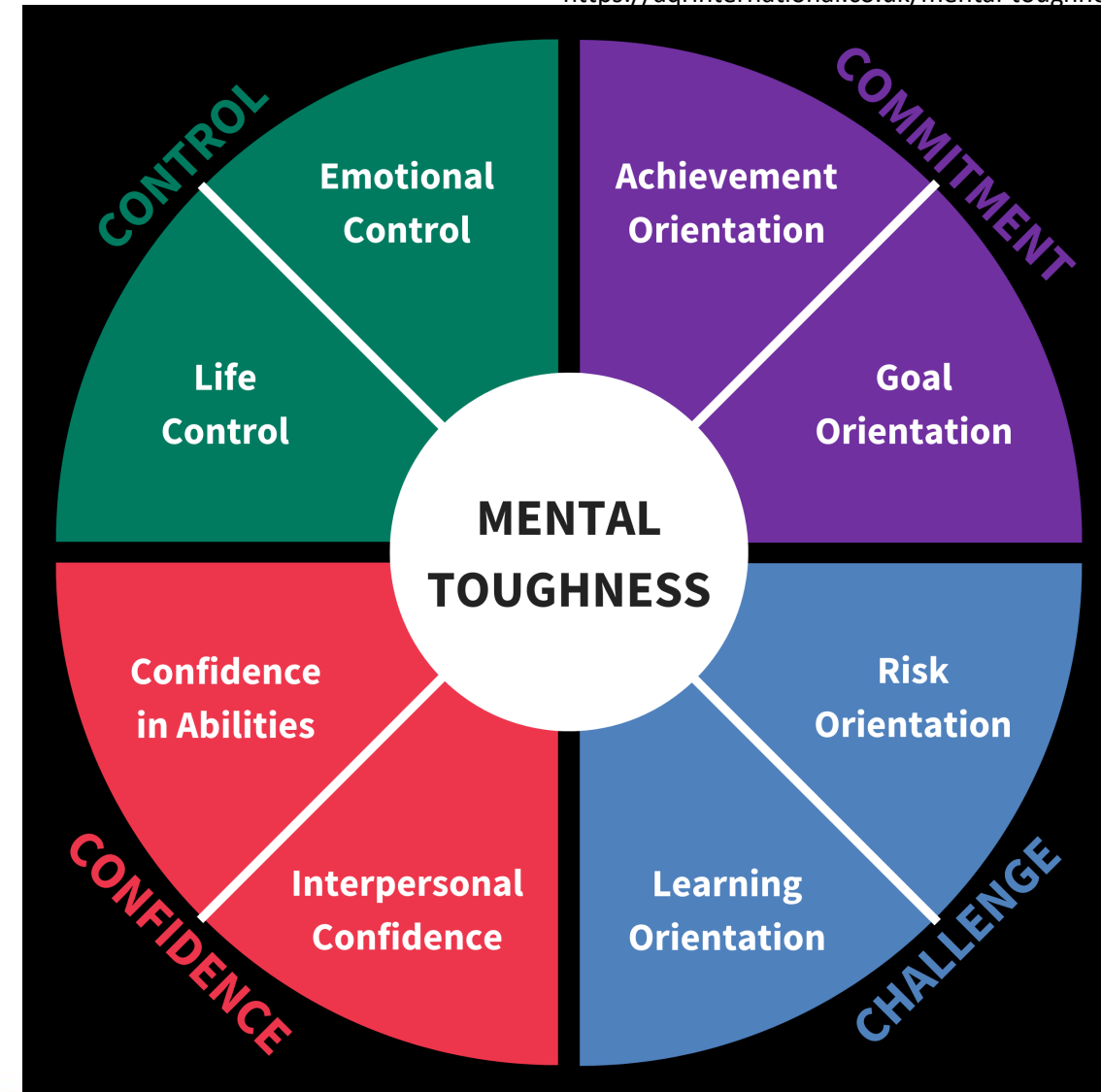
Breaking down the Mental Toughness Questionnaire (MTQ) by AQR International



What is Mental Toughness?

<https://aqrinternational.co.uk/mental-toughness>

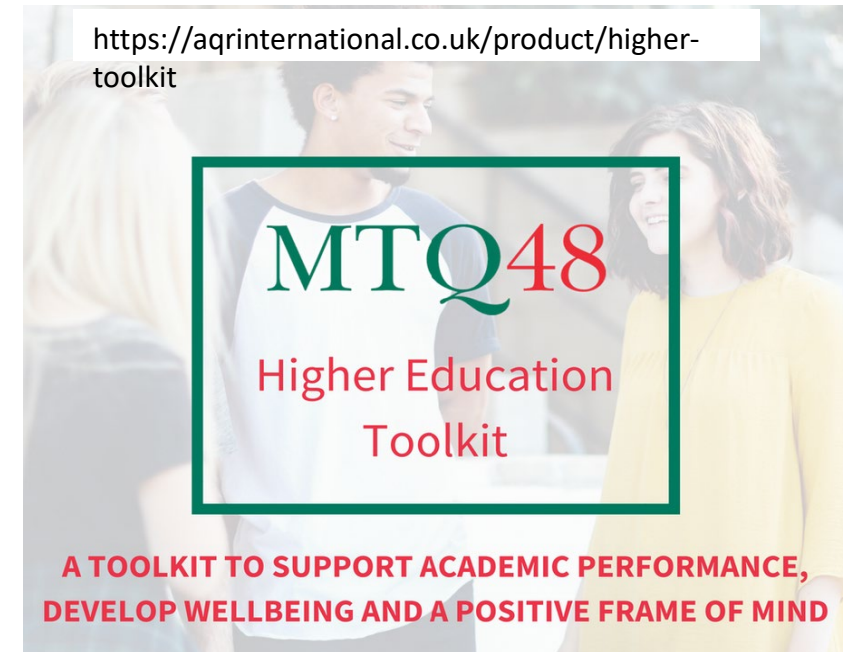
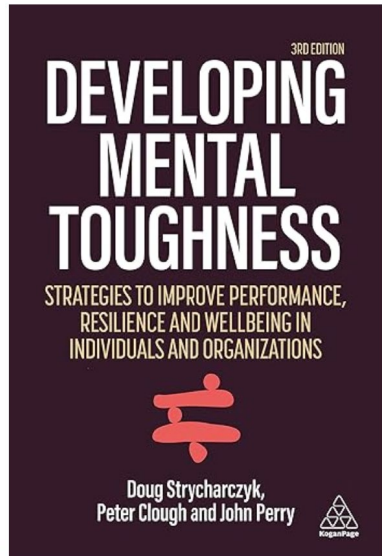
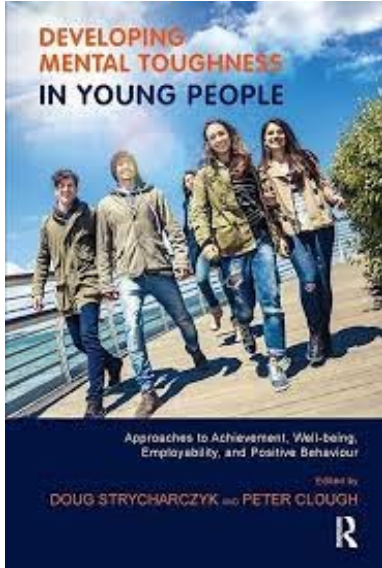
- 2002 Psychology practitioners and academics came together to define the concept of mental toughness
 - Key players in the discussion
 - **Richard Dienstbier**
 - “Toughening [is] when challenging situations require active coping and problem solving” (Clough P, et al., 2022).
 - **Jim Loehr EdD**
 - “Mental toughness [is] the ability to consistently perform towards the upper range of your capabilities, regardless of competitive circumstances” (Clough P, et al., 2022).
 - **Peter Clough PhD**
 - Worked with colleagues to develop a questionnaire and program to test hypotheses about mental toughness (Clough P, et al., 2022).
 - Sports specific



<https://youtu.be/9ICUVBhHyiM>

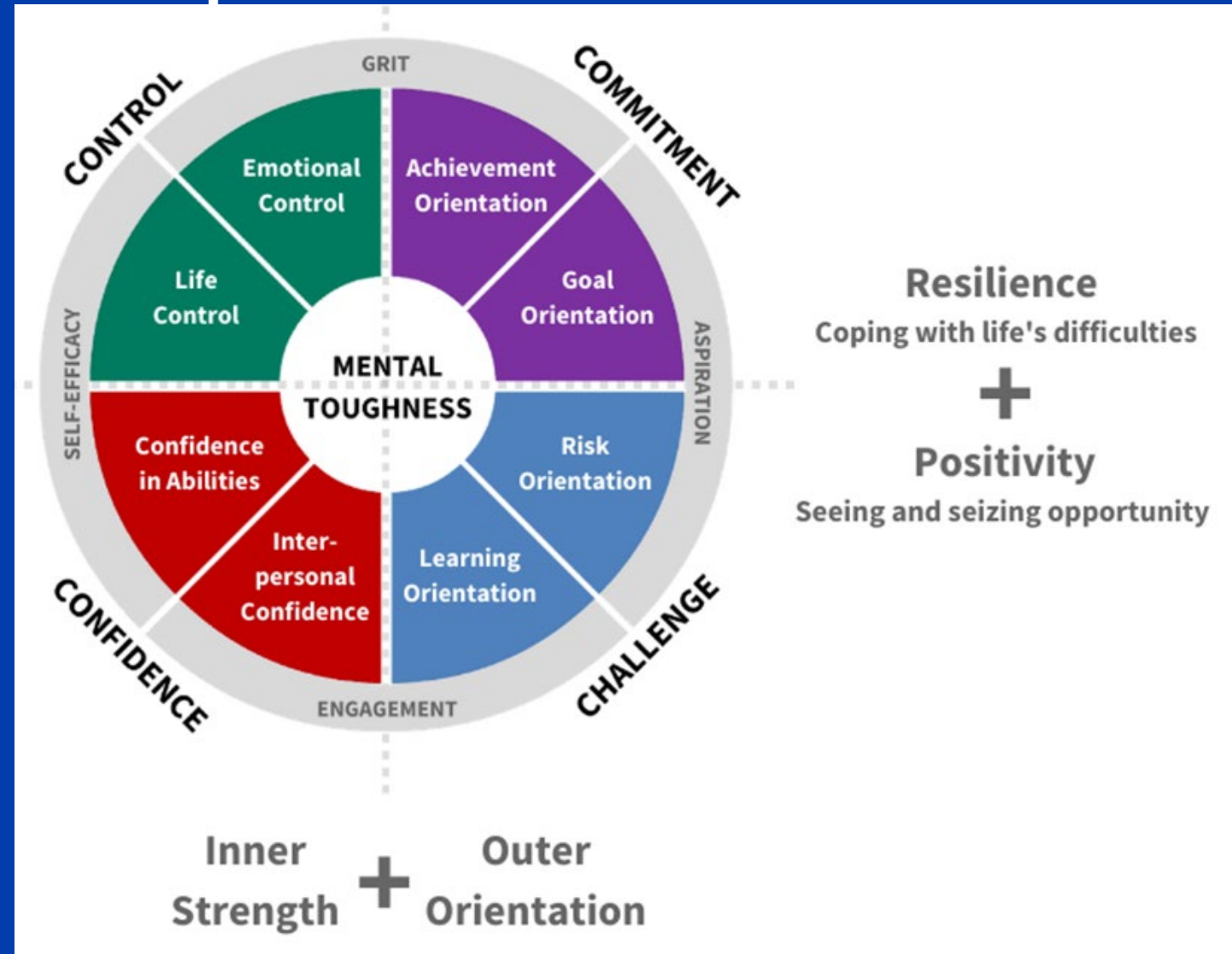
Developing Mental Toughness in Students

- Interventions based on the individuals' "mental sensitivities"
 - Basic scripts included in the MTQ user guide
 - Toolkits – Specialized for higher ed
 - Exercises for classroom use
 - Books to support approaches
- Example – Low MT score with an outlier of low emotional control
 - Positive thinking/growth mindset
 - Anxiety control
 - Fatigue management



Why or how can it help our students?

- Health – stress and anxiety
- Workforce - effective team member or leader
- Education – improved awareness of sensitivities early
 - A more aware student is able to focus on their more mentally sensitive traits
- Has a GROW approach that could be used to guide improvement using the MTQ results more systematically



We need to keep investigating

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<https://doi.org/10.1080/01443410.2023.2205622>



Mental toughness in higher education: exploring the roles of flow and feedback



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ABSTRACT

Previous research has found that mental toughness is a predictor of attainment in higher education, but there is little empirical research investigating the underpinnings of this. Two studies were therefore conducted to explore why mental toughness may be important. In Study 1, 123 undergraduates completed measures of mental toughness, flow, engagement with feedback, and reported their academic attainment. Components of mental toughness, particularly commitment, were related to flow, engagement with feedback, and academic performance. Flow and engagement with feedback were found to be significant mediators of the relationship between the commitment component of mental toughness and academic performance. In Study 2, 79 participants completed a measure of mental toughness and were assigned to high or low mental toughness groups. They then completed two mathematics tasks, and received either positive, negative, or no feedback between the tasks. Those with lower mental toughness were found to perform less well following negative feedback than those with higher mental toughness. The results are discussed in terms of implications for educators who provide feedback and seek to encourage students to engage with that feedback.

ARTICLE HISTORY

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KEYWORDS

Mental toughness;
commitment; flow;
feedback; academic
performance

Strategies for Developing Mental Toughness in Higher Education and Measuring the Impact

Abstract

There is an increasing awareness that higher education (HE) institutions face significant challenges in managing and supporting students as they transition into university life. If HE institutions struggle to achieve this important aim, this can lead to an increase in student drop-out. This can of course present significant financial implications and challenges and worse still, result in mental health challenges in students. The concept of Mental Toughness (MT) has been shown in a substantial number of investigations, to develop our understanding of why some people might be more vulnerable to these pressures than others. Importantly, it provides both a means of identifying those people and insights about ways they can be best supported. This chapter proposes a well-researched MT framework to facilitate and support universities with these challenges and highlights three key strategies for managing this successfully.

- **Citation** [Meggs, J.](#) and [Sewell, P.](#) (2022), "Strategies for Developing Mental Toughness in Higher Education and Measuring the Impact", [Sengupta, E.](#) and [Blessinger, P.](#) (Ed.) *Innovative Approaches in Pedagogy for Higher Education Classrooms (Innovations in Higher Education Teaching and Learning, Vol. 42)*, Emerald Publishing Limited, Leeds, pp. 121-135. <https://doi.org/10.1108/S2055-364120220000042009>

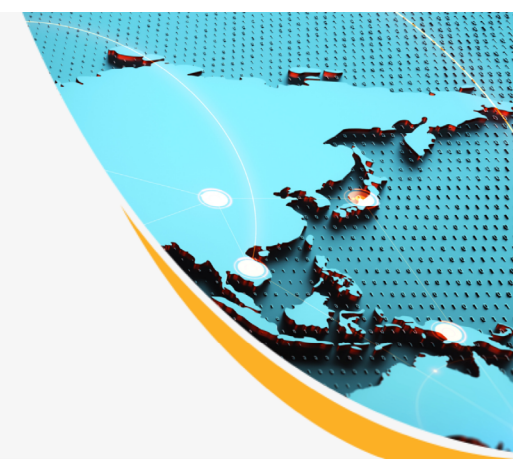
Research Background

- Over 100 research projects – as of 2022
 - Explains behavior and performance
 - Applications in mental health and wellbeing
 - Aspirations for growth
 - Confirms the validity of the questionnaire
- Still unsure of which techniques work best and why for building it
 - Including focus on individual variations between the educators versus the students
 - Which ones need mental toughness support to improve the other?
 - But we have proved that mental toughness is developable and improvable

<https://iridiamedical.com/aqr-partnership/>

<https://aqrinternational.co.uk/evidencing-our-work>

AQR Makes
Waves in North
America:
Partnering with
Iridia to
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MTQPlus



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JUNE 4, 2024 BY MATTHEW HOURIGAN

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Questions?

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