

# ACT as a Proposed Modality for Medical Students' Performance Anxiety

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Performance anxiety is similar in both sports and clinical medical examinations. Frequent practising for autopilot skills performance and psychological endurance are present in a sporting environment and clinical examination setting. Hence, performance anxiety is a modifiable factor that should be targeted for psychological preparation. Acceptance and commitment therapy (ACT), a psychological intervention promoting mindfulness and awareness of thoughts, is proven to enhance performance among sportspeople and musicians. This concept paper highlights conceptual similarities on performance anxiety between sporting and clinical examinations and proposed ACT as a treatment modality to enhance performance among medical candidates, as well as methods for measuring the improvement.

**Keywords:** *Performance Anxiety, Clinical Medical Examination, ACT, Psychological Flexibility*

## INTRODUCTION

Clinical undergraduate and postgraduate medical examinations are an integral part of every medical practitioner's life. To complete one's training as a doctor, one has to pass through multiple licensing examinations, many of which combine a theoretical exam with a high proportion of clinical examinations. This process does not abate as one progresses through training; in fact, the higher one ascends, the higher the proportion of clinical examinations.

Hence, failure rates correspondingly increase as one climbs the ladder of medical education. However, this is usually not correlated with performance in theory examinations.

Successful performance during clinical medical examinations, or loosely termed as clinical examinations, is dependent on multiple factors that can be divided into two major categories as an external and internal component. An external component includes the variability of an examiner and also patient or actor that is assigned for clinical examination purposes (Awaisu et al, 2007). While an internal component is mainly from within candidates themselves like confidence and psychological factors (Muldoon et al, 2014 ; Furlong et al, 2005). The external component is mainly non-modifiable if viewed from the candidates' perspective contrary to the internal component, which implies that psychological preparation is a feasible and plausible targeted intervention. Hence, there would be much utility and potentially much-reduced anguish and financial implications if there are brief interventions explicitly targeted at these psychological factors.

This paper is aimed at exploring conceptual similarities between sporting performance anxiety and clinical examination performance anxiety, and discussing acceptance and commitment therapy (ACT) as a strategic model to tackle clinical performance anxiety for performance enhancement.

## **VIEWING CLINICAL EXAMINATIONS THROUGH THE LENS OF SPORTS PSYCHIATRY**

In many ways, the skills required by a student undergoing clinical examinations are similar to a sportsperson. Many researches accrued over the years have demonstrated that sports performance in competitions is no longer merely a direct function of objective anthropometric measures or body fitness parameters, but rather, there is the presence of inverse relationships between psychopathology and sports performances (Raglin, 2001). There is a burgeoning role in sports psychiatry as a discipline in dealing with performance anxiety, inability to initiate sporting activities, issues with psychological endurance, and issues with commitment and confidence (Markser, 2011).

Clinical examinations in medicine are relatively akin to a sport. Individuals are required to train by practising on multiple patients in multiple settings. Just like any sport, the more often one performs a discrete skill, the smoother the process is, and consequently, the less time taken to complete the performance of the skill. This repeated practise enhances students' self-confidence, knowledge, competence, critical thinking, and satisfaction (Al Gharibi et al, 2020). Hence, there would be more time for the student to perform higher-order thinking, information processing, and communication during the clinical examination, as the raw clinical skills have been transformed into autopilot.



Clinical examinations are usually conducted over a few days, with a mix of multiple short cases, long cases, and OSCEs (Objective Structured Clinical Examinations) that consist of brief encounters lasting 7-10 minutes each for testing one discrete skill (Nasir et al, 2014). From a sporting environment, there are parallels for each of these clinical examinations. Long cases would be more reminiscent of marathons, where the emphasis is on pacing oneself for endurance; short cases mimic a short distance run or long jump sports where there is equal emphasis on efficiency and showmanship, and OSCE would be more of an exhibition of various skills where athletes need to demonstrate technical mastery of particular abilities. Concurrently, performing clinical examinations does require physical endurance, as there are usually multiple patients to be examined in one examination circuit with multiple physical examinations to be performed. Last and not least, just like any sport, mental strength and endurance play a significant role. Students and athletes alike, albeit well equipped with a high level of skill, may not be able to fulfil their full potential and excel in the performance assessment due to weak perseverance from mental fatigue.

On that note, there are other complications for clinical exams that are indistinguishable from sporting events. Sportspeople can crash due to performance anxiety or concerns over their confidence leading to a mere difference of milliseconds that can entirely affect the medal positions of a sports event (Khan MK et al, 2017). This is reasonably similar to clinical examinations, where well-prepared candidates can be unsettled by performance anxiety or sudden loss of confidence, and equilibrium is hence disrupted (Furlong et al, 2005).

Besides, sportspeople who perform poorly in one leg or one particular section of a race or match, need to have sufficient resilience and need to manage somehow the inevitable anxiety of "doing poorly" as not to let it become a subsequent self-fulfilling prophecy. This facilitates them psychologically in order to bounce back during the next leg, race, or match, as games are usually lost on overall performance averaged, rather than due to one poor performance (as evidenced by countless "miracle comeback" stories during significant football matches). This is uncannily similar to clinical examinations, where overall results are not won or lost on one poor performance, but rather as an average of a few consecutive examinations, thus individuals who perform poorly as a result of being given the "most difficult station" by chance need to be able to immediately bounce back and handle the next station without psychological sequelae from the first one. Such ability presents a significant challenge for students to master.

Much of the psychological conditioning needs to be done on autopilot. There are many automatic processes like focusing our attention, what we recall from our thoughts, what we pick out from the stream of stimuli that hit us and how we perceive them shows that unconscious processes significantly control our consciousness which is what we call autopilot (Steve Ayan, 2018).

If sportspeople keep rewinding in their minds throughout games or matches on the steps of positive thinking or ways to regulate their emotions, they will most certainly be distracted from their primary focus on performing the sports activity yielding suboptimal performance as a result. The same can be said for students undergoing clinical examinations, as they need to be accustomed to the skills of autopilot psychological regulation, so they are free to perform clinically. These psychological skills need to be easily piloted, structured, and manualised by the students.

Nevertheless, it is incumbent that anxiety is an expected, if not necessary, component, be it for sporting or clinical examinations. The Yerkes-Dodson law suggests that anxiety is beneficial in low amounts to drive peoples' performance forward, but overwhelming anxiety can paradoxically impair performance (Sodhi K et al, 2016). Hence, the onus is not upon the sports psychiatry to create an anxiety-free performer but rather, to regulate the anxiety as a driving force rather than an impediment.

## **ACCEPTANCE AND COMMITMENT THERAPY AS A MODEL FOR PERFORMANCE ENHANCEMENT**

Acceptance and commitment therapy (ACT) is a third-wave behavioural therapy that promotes mindfulness and awareness of one's thoughts, rather than control over one's negative thoughts as in traditional Cognitive Behaviour Therapy (Hayes et al., 2011). It involves a combination of mindfulness skills, being present, diffusion from unhelpful thoughts, and committed action via value and goal clarification. This is incorporated into what ACT calls a "hexaflex" of six associated psychological processes that combine the skills as mentioned above.

In a nutshell, ACT hexaflex processes do not aim to alter people's emotions. Instead, ACT aims to help people alter their behaviours that result from their thoughts and emotions, and accept such thoughts and emotions better and without reservations, in order to live a more fulfilling and a more wanted life. This is a radical departure from earlier modalities of psychotherapy, Cognitive Behavioural Therapy (CBT) which postulated distressing emotions as "negative thoughts" that were amenable to treatment via disputation and subsequent reduction of negative thoughts (Hayes & Hofmann, 2018). Hence, the primary goal of ACT is not symptom reduction, but rather, a principle called psychological flexibility, and ability to contact the present moment fully as a conscious human being, based on what the situation affords, and able to change or persist in behaviour based on the service of chosen values (Kashdan & Rottenberg, 2010). In other words, this refers to holding on to an individual's thoughts and emotions a bit more lightly and acting on longer-term values and goals rather than short term impulses, thoughts and feelings. There is compelling evidence suggesting that increased psychological flexibility can increase academic performance (Asikainen et al, 2018). However, there is a tiny measurement of psychological flexibility in a clinical learning

population within medicine setting, but there has been evidence showing functional correlations with life satisfaction (Palladino et al, 2013).

As mentioned above, sports and clinical examinations appear to share certain similarities in terms of anxiety inducement. Both create inevitable anxiety and other unpleasant or intense emotions, and both feature stressors that are unavoidable, for example, challenging competitions or competitors. Both have unpredictable triggering of anxiety, be it due to abrupt changes in the surrounding game or clinical examination conditions, or unavoidable improvements (perceived or otherwise) of competitors surrounding them. Hence, ACT can be viewed as a suited strategy and therapy modality to employ. Its founding principles entail advocating acceptance of strong emotions, learning of techniques to work through the distress of these emotions, and plans for committed action.

To that extent, the theoretical constructs proposed suggest it is reasonably likely that a therapeutic intervention featuring ACT techniques, with some aspects of performance enhancement, would be able to improve performance in clinical examinations. Established literature has shown the effectiveness of ACT in various circumstances, although these were not exclusive to clinical examinations. One similar construct is a social anxiety disorder, which may form a big part of the performance anxiety surrounding clinical anxiety, for which ACT is a recognised and efficacious clinical treatment (Levin et al, 2017). Studies have demonstrated that ACT interventions have been efficacious in improving test anxiety in high school students and undergraduate groups, albeit with tiny sample sizes (Saeed et al., 2016; Zettle RD, 2003). Other similar mindfulness interventions have had benefits in secondary school groups of reasonably large size for academic performance, self-concept and anxiety (Franco et al, 2010). For groups with graduate students, there have been notable changes in measures of academic performance, psychological flexibility, values-driven behaviour, and stress (Paliliunas D et al., 2018). However, most of these studies still feature anxiety related to traditional pen-and-paper tests, where the element of performance is not part of the assessment procedure.

A similar construct to clinical examination performance anxiety that has been more frequently researched is music performance anxiety (MPA), which is a debilitating state that affects an estimated 15-25% of both learners and performers (James I, 1997; Schroder H & Liebelt P, 1999). Previous studies have focused heavily on studies with small sample sizes concentrating on psychodynamic and cognitive-behavioural therapy (Matei R & Ginsborg J, 2017). In the past five years, new single-individual study designs demonstrated improvements in performance quality and mastery of ACT-related skills (Juncos DG & Markman EJ, 2016). Another parallel study using ACT has observed improvements in participants' cognitive diffusion, acceptance of MPA symptoms, and psychological flexibility at post-treatment and follow-ups. Students also appeared to improve their performance quality and reduce their shame regarding MPA (Juncos DG et al., 2017). However, it is acknowledged that much of the

literature in MPA is still in its infancy and is still plagued by concerns with methodology and sample size issues (Matei R & Ginsborg J, 2017)

## DISCUSSION

Based on the literature review above, the following three hypotheses are postulated in this concept paper. (i) Firstly, there should be significant improvements in measurable ACT hexaflex processes (mindfulness, diffusion, acceptance, values identification, and committed action) in individuals going for clinical examinations. This is supported by parallel measures in music performance anxiety outcomes (Juncos DG & Markman EJ, 2016; Juncos DG et al., 2017). Moreover, these improvements should be sustainable and maintained at periodic follow-ups. (ii) The second proposition, which enables further research is that the ACT interventions would have significant improvements in performance levels in clinical examinations post-treatment, as demonstrated in MPA (Matei R & Ginsborg J, 2017). This is plausible to measure by analysing students' clinical examination results and separating them into theoretical and practical results. This information could be obtained by comparing pre- and post-interventions. (iii) As a third addendum, given that ACT does not mandate or support symptom reduction as a goal of treatment, no predictions would be made during the establishment of this conceptual framework regarding the reduction of specific anxiety symptoms. No doubt, however, during research studies that are to follow, anxiety measures will be collected and tabulated in the effort to ensure future comparisons with established norms from extant literature are made feasible. All of these hypotheses have to be tested through proper pilot trials, and subsequent experimental study designs, to bolster and build on the evidence so far from MPA, that ACT techniques will be efficacious for clinical examination anxiety.

## CONCLUSION

This concept paper illustrates that there are many similarities between sports and clinical medical examinations. If one uses a sports psychiatry framework to deal with the performance anxiety that ensues, one can address the issues that impair a clinical medical student from fulfilling their true potential at the examination level. Also, this paper illustrates the benefits of the ACT model, where an individual is trained to deal with painful thoughts and feelings, not by attempting to ameliorate them, but by learning to accept them as part of everyday life and to be able to live a full and meaningful life through committed actions in the service of one's own values. Promising examples from the realm of music performance anxiety, albeit with minuscule sample sizes, suggest that this model can be translated over to clinical medical examinations, an uncharted area for the ACT model to be tested upon.

Also, as a coda, psychological flexibility must be targeted as a critical aspect of mediation in individuals who are sitting for clinical medical examinations. When individuals can hold on less tightly to ingrained ideas and thoughts about their performance and are instead able to



break free of those mental chains and perform come what may, they attain higher psychological flexibility. Candidates are better at defusing from unhelpful thoughts, being more mindful, accepting their thoughts and experiences, and forging ahead with committed action. Once this concept model is tested and proven beneficial in a pilot intervention for a group of medical students with acute needs (namely approaching major professional examinations or exit examination), it is hoped that an intervention module will be able to be manualised in order for this to be replicable. Henceforth, this conceptual framework can then be further tested in a larger controlled trial, and the real efficacy of ACT for clinical medical examination anxiety can be tested and evaluated.

### **CONFLICT OF INTEREST**

On behalf of all authors, the corresponding author states that there is no conflict of interest.



## REFERENCES

- Awaisu, A., Nik Mohamed, M. H., & Mohammad Al-Efan, Q. A. (2007). Perception of Pharmacy Students in Malaysia on the Use of Objective Structured Clinical Examinations to Evaluate Competence. *American Journal of Pharmaceutical Education*, 71(6), 118. doi:10.5688/aj7106118
- Muldoon, K., Biesty, L., & Smith, V. (2014). "I found the OSCE very stressful": Student midwives' attitudes towards an objective structured clinical examination (OSCE). *Nurse Education Today*, 34(3), 468–473. doi:10.1016/j.nedt.2013.04.022
- Furlong, E., Fox, P., Lavin, M., & Collins, R. (2005). Oncology nursing students' views of a modified OSCE. *European Journal of Oncology Nursing*, 9(4), 351–359. doi:10.1016/j.ejon.2005.03.001
- Raglin JS. Psychological factors in sports performance. *Sports Med.* 2001;31(12):875–90.
- Markser VZ. Sport psychiatry and psychotherapy. Mental strains and disorders in professional sports. Challenge and answer to societal changes. *Eur Arch Psychiatry Clin Neurosci.* 2011;261(2):182.
- Al Gharibi, MSN, K. A., & Arulappan, MSc(N), PhD, DNSc, J. (2020). Repeated Simulation Experience on Self-Confidence, Critical Thinking, and Competence of Nurses and Nursing Students—An Integrative Review. *SAGE Open Nursing*, 6, 237796082092737. doi:10.1177/2377960820927377
- Nasir AA, Yusuf AS, Abdur-Rahman LO, Babalola OM, Adeyeye AA, Popoola AA, et al. Medical students' perception of objective structured clinical examination: a feedback for process improvement. *J Surg Educ.* 2014;71(5):701–6.
- Khan MK, Khan A, Khan SU, Khan S. Effects of anxiety on athletic performance. *Res Inves Sports Med.* 2017;1:1–5.
- Steve Ayan. The brain's autopilot mechanism steers consciousness. *Scientific American Publication, a Division of Springer Nature America, Inc.* 2018
- Sodhi K, Luthra M, Mehta D. Yerkes-Dodson law for flow: A study on the role of competition and difficulty in the achievement of flow. *Int J Educ Manag Stud.* 2016;6(1):95.
- Hayes SC, Strosahl KD, Wilson KG. Acceptance and commitment therapy: The process and practise of mindful change. Guilford Press; 2011.



- Hayes SC, Hofmann SG. *Process-based CBT: The science and core clinical competencies of cognitive-behavioural therapy*. New Harbinger Publications; 2018.
- Kashdan TB, Rottenberg J. Psychological flexibility as a fundamental aspect of health. *Clin Psychol Rev*. 2010;30(7):865–78.
- Asikainen H, Hailikari T, Mattsson M. The interplay between academic emotions, psychological flexibility and self-regulation as predictors of academic achievement. *J Furth High Educ*. 2018;42(4):439–53.
- Palladino CL, Ange B, Richardson DS, Casillas R, Decker M, Gillies RA, et al. Measuring psychological flexibility in medical students and residents: a psychometric analysis. *Med Educ Online*. 2013;18(1):20932.
- Levin ME, Herbert JD, Forman EM. Acceptance and commitment therapy: a critical review to guide clinical decision making. *Treat Psychol Probl Syndr*. 2017;413.
- Saeed H, Ahmad A, Farah N, Mehdi MM. The effectiveness of acceptance and commitment therapy (ACT) on test anxiety and psychological well-being in high-school students. *Int J Humanit Cult Stud (IJHCS)* ISSN 2356-5926. 2016;1(1):1582–90.
- Zettle RD. Acceptance and commitment therapy (ACT) vs systematic desensitisation in the treatment of mathematics anxiety. *Psychol Rec*. 2003;53(2):197–215.
- Franco C, Mañas I, Cangas AJ, Gallego J. The applications of mindfulness with students of secondary school: Results on the academic performance, self-concept and anxiety. In: *World Summit on Knowledge Society*. 2010. pp. 83–97.
- Paliliunas D, Belisle J, Dixon MR. A randomised control trial to evaluate the use of acceptance and commitment therapy (ACT) to increase academic performance and psychological flexibility in graduate students. *Behav Anal Pract*. 2018;11(3):241–53.
- James I. *Federation Internationale des Musiciens 1997 survey of 56 orchestras worldwide*. London Br Assoc Perform Arts Med. 1997;
- Schröder H, Liebelt P. Psychologische Phänomen-und Bedingungsanalysen zur Podiumsangst von Studierenden an Musikhochschulen. *Musik und Musik*. 1999;6(1):1–6
- Matei R, Ginsborg J. Music performance anxiety in classical musicians--what we know about what works. *BJPsych Int*. 2017;14(2):33–5.



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Juncos DG, Markman EJ. Acceptance and commitment therapy for the treatment of music performance anxiety: a single subject design with a university student. *Psychol Music*. 2016;44(5):935–52.

Juncos DG, Heinrichs GA, Towle P, Duffy K, Grand SM, Morgan MC, et al. Acceptance and commitment therapy for the treatment of music performance anxiety: a pilot study with student vocalists. *Front Psychol*. 2017;8:986.