



World Confederation
for Physical Therapy



EMIRATES PHYSIOTHERAPY SOCIETY
شعبة العلاج الطبيعي / جمعية الإمارات الطبية



Movement for Health
World Physical Therapy Day

World Physical Therapy Day Talk: Exercise & Mental Health

8 September 2018

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جامعة الخليج الطبية
GULF MEDICAL UNIVERSITY
EDUCATION • HEALTHCARE • RESEARCH

20
YEARS

[illegible]

Patient care

Mental Hygiene

- ‘We are increasingly seeing the effects of **not prioritizing mental health in the workplace**. What was once (erroneously) perceived as a tangential “issue” affecting very few, is now emerging as one of the greatest workforce and **human challenges of our time**,’ - Council CEO Anton Barnett-Harris.



- A practitioner’s health and wellbeing is more than just about their physical wellbeing. It includes their **social, emotional and cultural wellbeing**,’ said Board Chair Charles Flynn.





What are brain and exercise benefits links?

What are the possible exercise based treatment options?

What are the current evidences for practice?

LIFTING WEIGHTS

Prefrontal cortex

complex thinking,
reasoning, multitasking,
problem-solving

YOGA

Frontal lobe

Insula

integrates thoughts
and emotions

Amygdala

fear and anxiety

HIGH-INTENSITY INTERVALS

Hypothalamus

appetite regulation,

SPORTS DRILLS

Prefrontal cortex

Basal ganglia

attention, switching
between tasks, inhibition

Parietal lobe

visual-spatial
processing

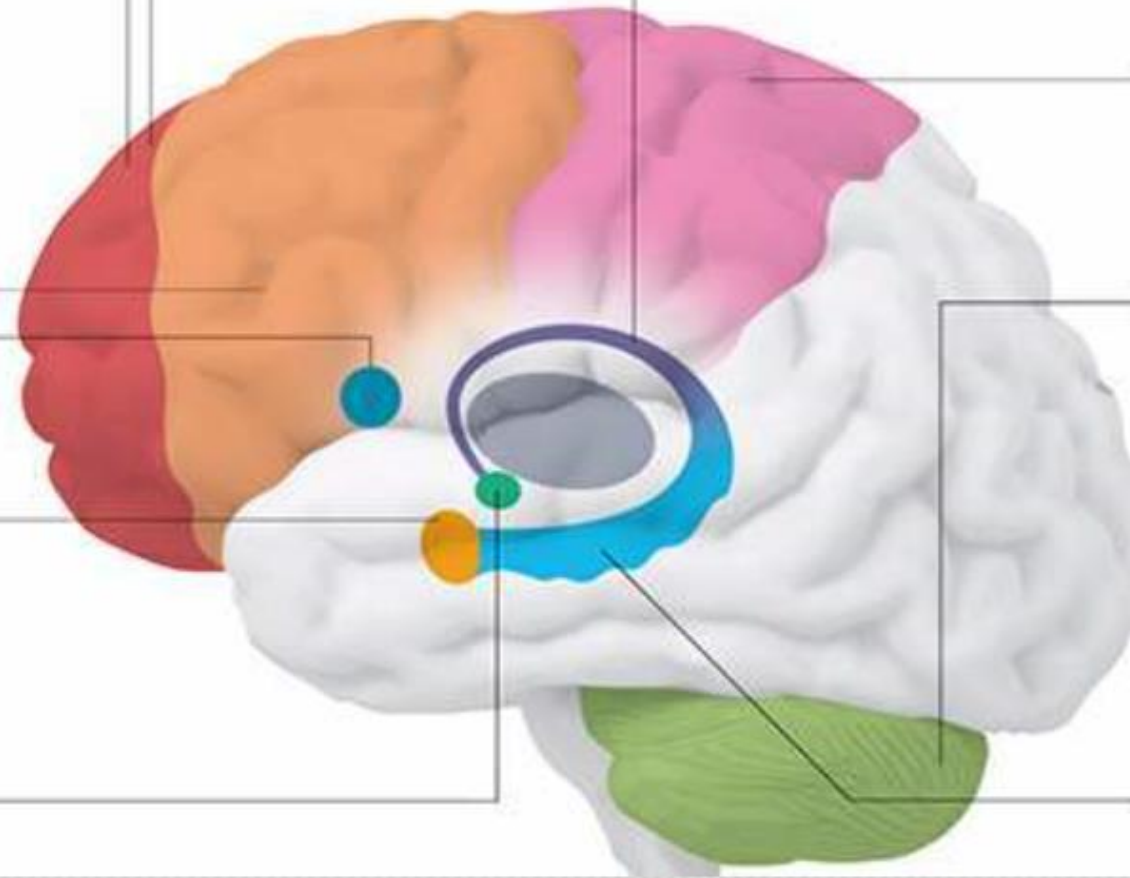
Cerebellum

attention

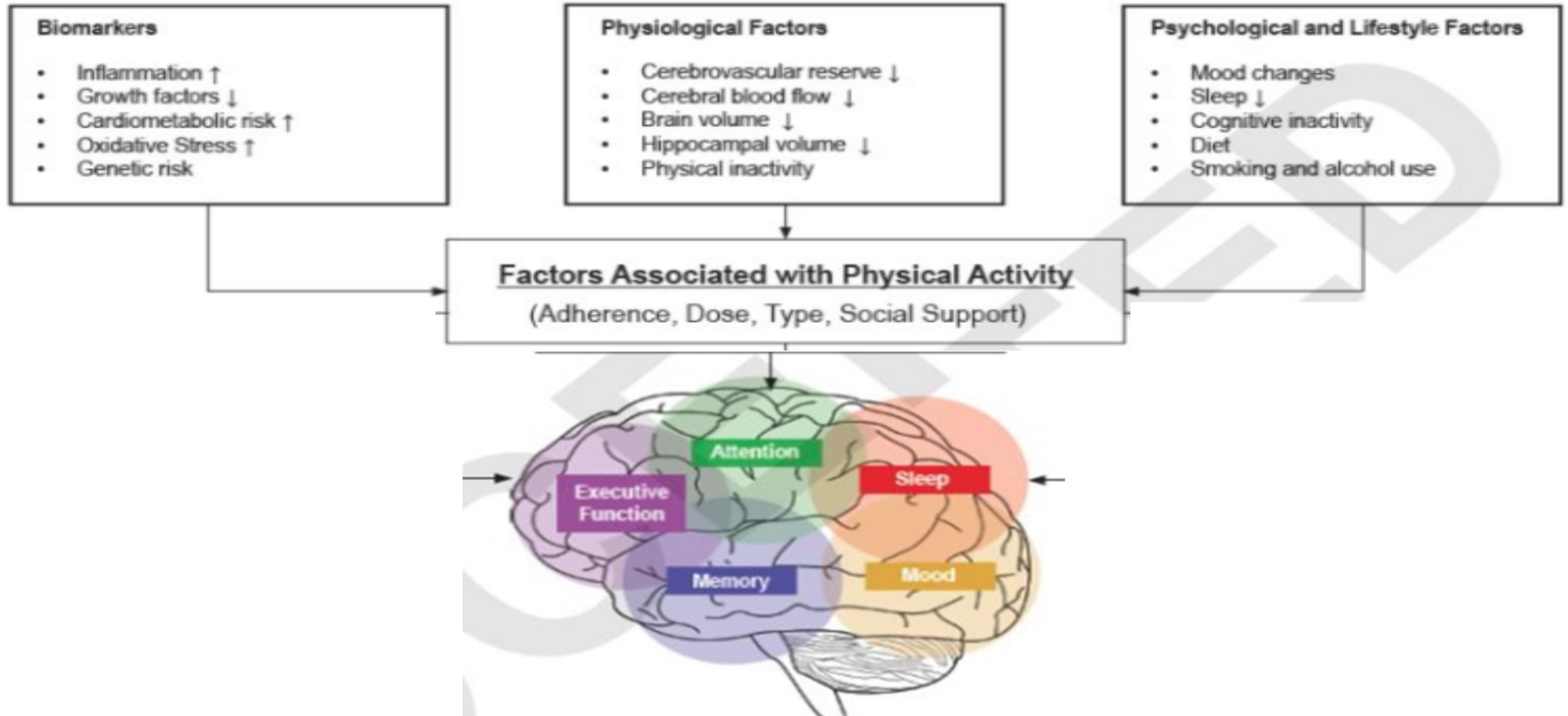
AEROBIC EXERCISE

Hippocampus

memory



Proposed Mechanisms Underlying Cognitive Decline with Aging

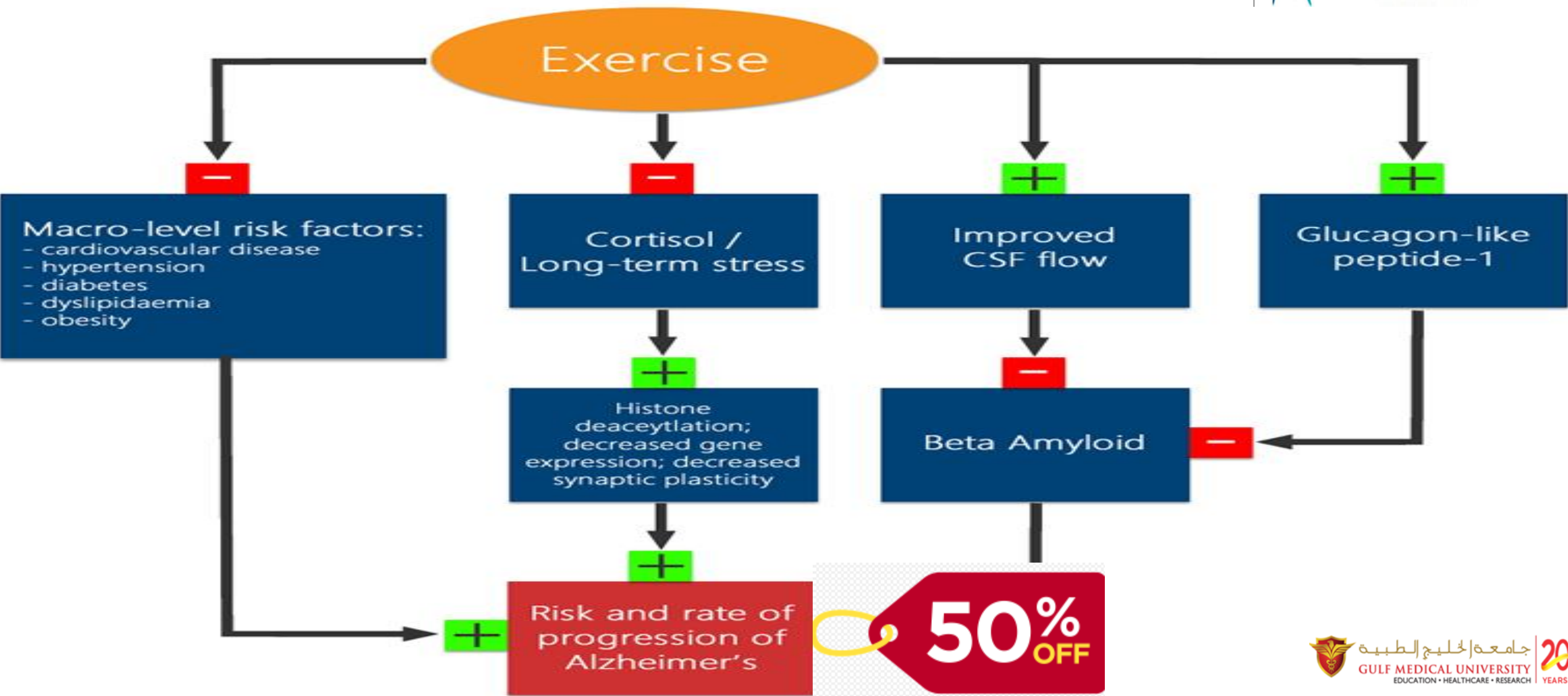


Exercise and Sport Sciences Reviews. Publish Ahead of Print(); JUL 2018

Protective Effects of Exercise on Cognition and Brain Health in Older Adults

Amanda V. Tyndall; Cameron M. Clark; Todd J. Anderson; David B. Hogan; Michael D. Hill; R. Stewart Longman; Marc J. Poulin

NEURO-PROTECTIVE EFFECTS



Alzheimer's

Parkinson's

General
cognitive
decline

Depression

Traumatic
Brain Injury

30%
off

88%

31%

Enhanced
brain plasticity

IGF1

BDNF

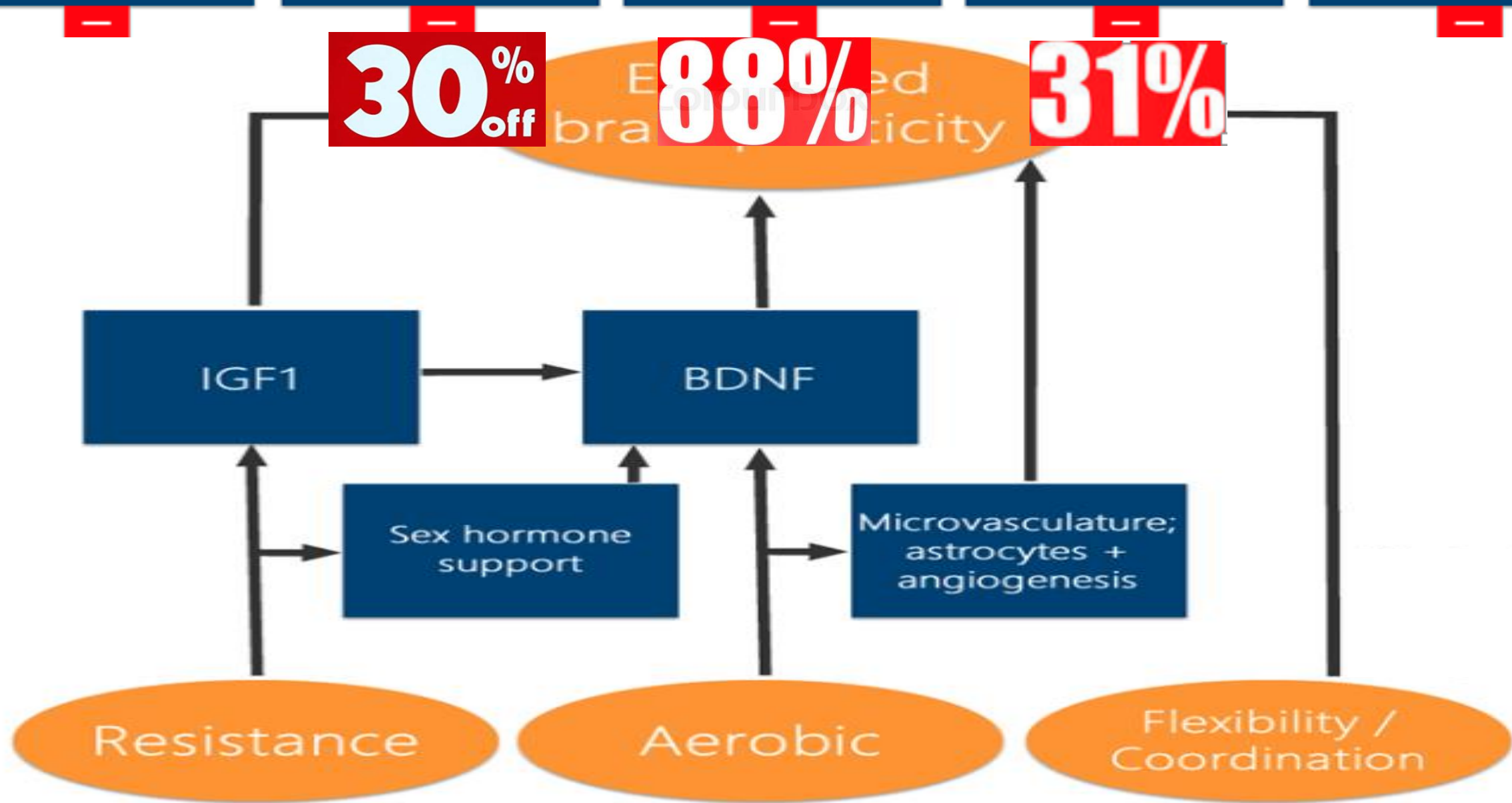
Sex hormone
support

Microvasculature;
astrocytes +
angiogenesis

Resistance

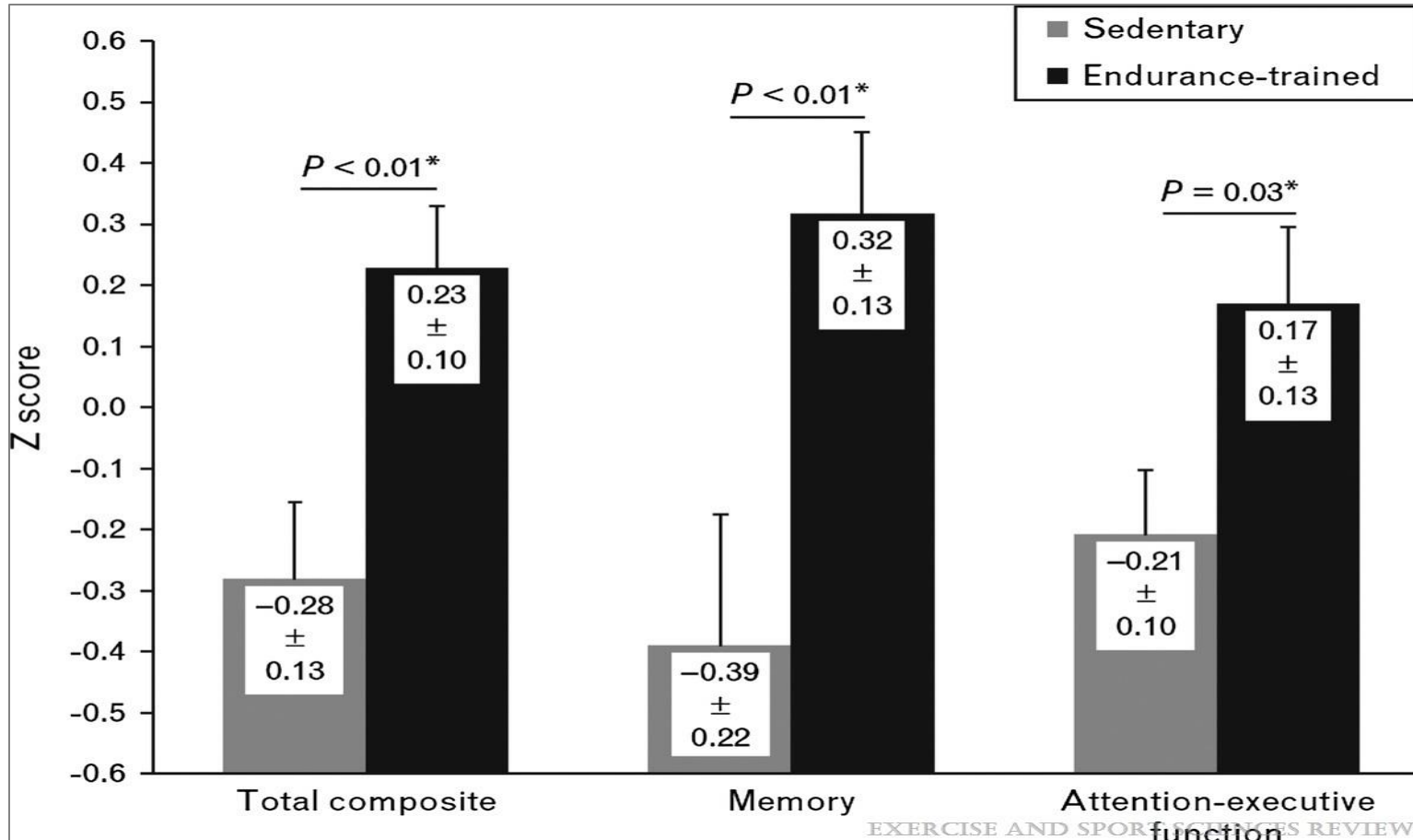
Aerobic

Flexibility /
Coordination



EVIDENCES FOR MENTAL HEALTH

Figure 1



The Role of Exercise-Induced Cardiovascular Adaptation in Brain Health

Tarumi, Takashi; Zhang, Rong

Exercise and Sport Sciences Reviews 43(4):181-189, October 2015.

Endurance-trained master athletes demonstrated a **higher cognitive performance in episodic memory, attention-executive function, and total composite scores than age-matched sedentary adults**. The sample-specific Z score was calculated for each of the cognitive domains. The numbers inside bar graphs are mean \pm standard error. (Reprinted from (31). Copyright © 2013 Wolters Kluwer Health. Used with permission.)



○ = mature neuron
 ● = immature neuron
 ⊗ = dead neuron

	Before	During	After
No training			
Physical exercise			
Mental training			
Mental and Physical (MAP) training			



Training your brain: Do mental and physical (MAP) training enhance cognition through the process of neurogenesis in the hippocampus?

Citation data: Neuropharmacology, ISSN: 1873-7064, Vol: 64, Issue: 1, Page: 506-14
 Publication Year: 2013

Explore PlumX Metrics

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 How can I use them?

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Exports-Saves ☺	119	References ☺	1	Shares, Likes & Comments ☺	27				
		Blog Mentions ☺	1						

Physiotherapy Treatment Approach



Mental Training:

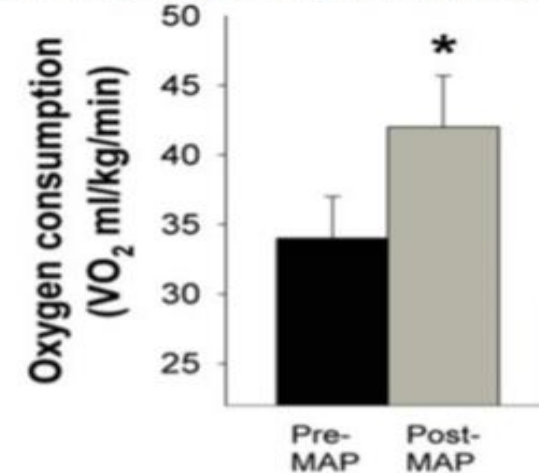
- 30-min focused attention meditation (20-min sitting; 10-min walking)

Physical Training:

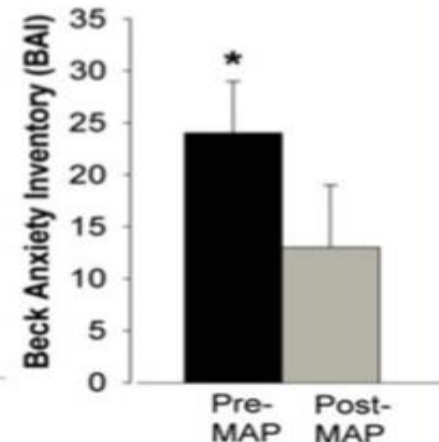
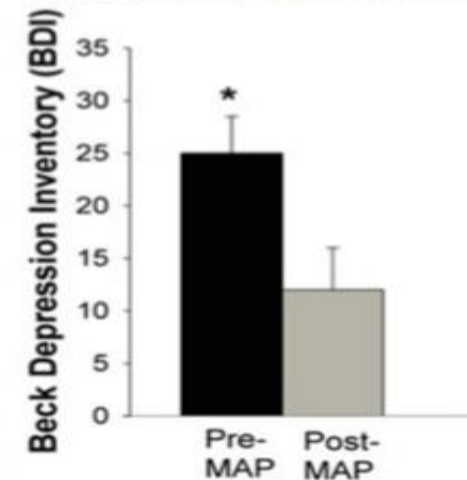
- 30-min aerobic exercise with motor skill training

2 supervised sessions a week for 8 weeks

A. PHYSICAL HEALTH OUTCOME



B. MENTAL HEALTH OUTCOMES



The effects of single bouts of aerobic exercise, exergaming, and videogame play on cognitive control

[Kevin C. O'Leary](#), [Matthew B. Pontifex](#), [Mark R. Scudder](#), [Michael L. Brown](#), [Charles H. Hillman](#)  

University of Illinois at Urbana-Champaign, United States



DOI: <https://doi.org/10.1016/j.clinph.2011.01.049>



- Treadmill-based exercise, in contrast to exergaming, facilitated neurocognition.
- Exergames may not incur the same benefits to brain and cognition as traditional physical activities.

BDNF EXERCISES



BRAIN DERIVED NEUROTROPHIC FACTOR (BDNF) AND EXERCISE

EXERCISE RIGHT'S FIVE FAVOURITE WAYS TO MOVE FOR MORE BDNF

INDOOR ROCK-CLIMBING – especially if you actively commute to the rock wall!

TRAIL RUNNING – something with twists, turns and great views is awesome

DANCING – where you're learning new moves and also working your fitness

FUNCTIONAL MOVEMENT – wait until the after school rush has finished then go check out (and play on) your nearest playground – think monkey bars, crawling through tunnels and balancing on beams

TEAM SPORTS – they require you to be getting great aerobic gains by running around, whilst also working your brain in terms of strategy and quick thinking

Journal

Journal of Mental Health >

Volume 23, 2014 - Issue 3

Research Article

Understanding the role of physiotherapists in schizophrenia: an international perspective from members of the International Organisation of Physical Therapists in Mental Health (IOPTMH)

Brendon Stubbs ✉, Andy Soundy, Michel Probst, Marc De Hert, Amber De Herdt & Davy Vancampfort

Pages 125-129 | Received 08 Jul 2013, Accepted 04 Oct 2013, Published online: 10 Jan 2014

Download citation <https://doi.org/10.3109/09638237.2013.869574>



Perspectives in Rehabilitation

Exercise therapy improves both mental and physical health in patients with major depression

Jan Knapen ✉, Davy Vancampfort, Yves Moriën & Yannick Marchal

Pages 1490-1495 | Received 11 Mar 2014, Accepted 30 Sep 2014, Published online: 24 Oct 2014

Download citation <https://doi.org/10.3109/09638288.2014.972579>



Journal

Disability and Rehabilitation :

Volume 37, 2015 - Issue 16

Implementing evidence-based physical activity interventions for people with mental illness: an Australian perspective.

Rosenbaum S¹, Tiedemann A², Stanton R³, Parker A⁴, Waterreus A⁵, Curtis J⁶, Ward PB⁷.

RESULTS:

RESULTS: Evidence supporting the inclusion of PA programs as an adjunct to treatment for various conditions was including depression, schizophrenia, anxiety disorders, post-traumatic stress disorder and substance abuse. In light of available evidence, the inclusion of clinical PA programs within mental health treatment, facilitated by dedicated clinicians (exercise physiologists / physiotherapists) was justified.

J Nerv Ment Dis. 2016 Sep;204(9):658-64. doi: 10.1097/NMD.0000000000000510.

The Effect of Acute Exercise on Affect and Arousal in Inpatient Mental Health Consumers.

Stanton R¹, Reaburn P, Happell B.

RESULTS:

performed at a self-selected intensity in 40 inpatient mental health consumers who received a diagnosis of anxiety or bipolar or depressive disorders. Exercise intensity was assessed immediately after exercise. Postexercise affect was significantly improved for people with bipolar and depressive disorders but not for people with anxiety disorders. For the group as a whole, results showed a significant curvilinear relationship between ratings of perceived exertion and postexercise affect. These data will inform

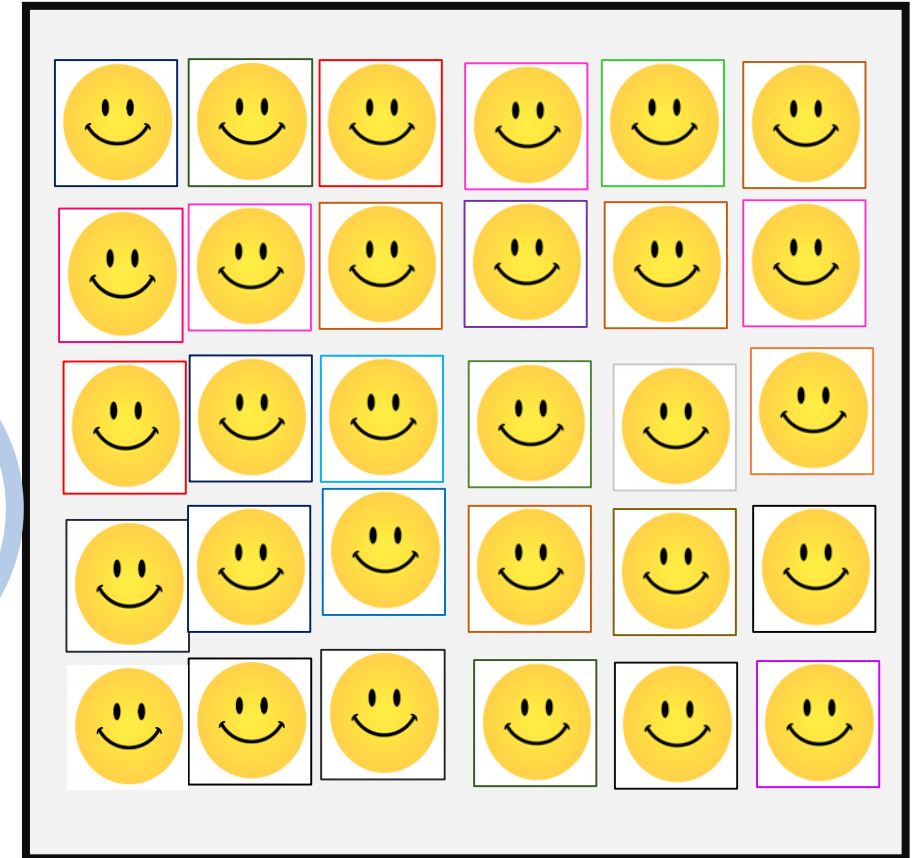
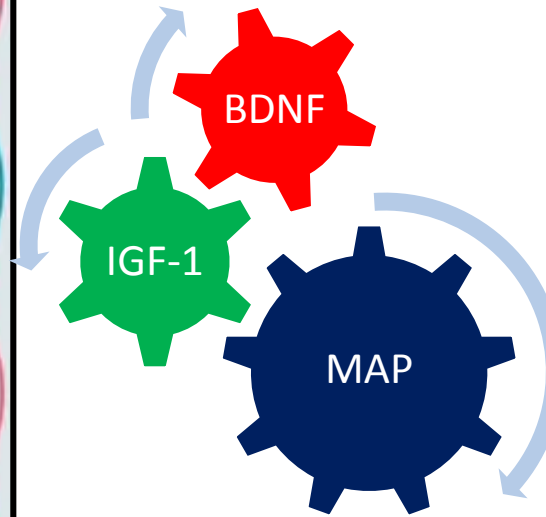
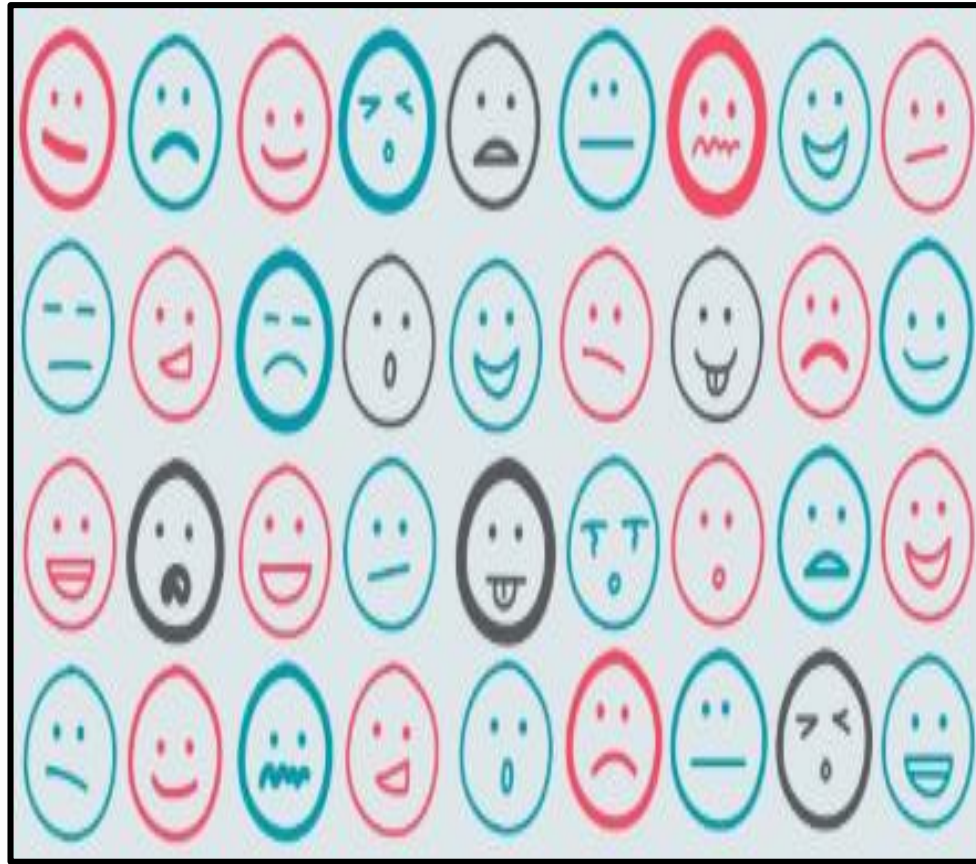
ROLE OF PHYSIOTHERAPIST

Impact of mental health interventions in the workplace on depression and / or anxiety: systematic meta-review

Systematic meta-review of effectiveness of workplace mental health interventions aiming to prevent, treat or rehabilitate workers with depression and / or anxiety: findings from 20 eligible studies

Intervention	Evidence for symptom reduction	Evidence for occupational outcome improvement	Comments
CBT for established depression or anxiety disorder	Strong	Moderate	Strong evidence CBT can reduce depressive symptoms; impact on organisational outcomes less certain
CBT-based stress management interventions	Strong	Limited / inconclusive	Produce individual benefits in terms of reduced stress and symptoms; do not appear to translate to improvements in organisational outcomes such as absenteeism
Physical activity	Moderate	Limited / contradictory	May impact on employee mental health. Mixed findings regarding organisational outcomes
Increased employee control	Moderate	Limited / inconclusive	Interventions such as problem-solving committees, stress-reduction committees, self-scheduling of shifts and gradual / partial retirement appear to reduce symptoms
Workplace health promotion	Limited / contradictory	Limited / contradictory	Mixed findings. May have an effect on absenteeism but unclear which components most effective
Screening	Limited / contradictory	Limited / contradictory	Limited evidence from small number of RCTs for effectiveness in certain work situations
Counselling	Limited / contradictory	Limited / contradictory	Objective evidence of benefit remains unclear

EXERCISE IS MEDICINE FOR MENTAL HEALTH



THANK YOU