

# XXVIII IFSO World Congress

9-12 September 2025 | Santiago, Chile



IH SESSION: ASSESSING AND INTERVENING ON BEHAVIORS AND PSYCHOSOCIAL FACTORS IN THE NEW ERA OF COMBINED THERAPIES

**IMPORTANCE OF PHYSICAL ACTIVITY AND OTHER MOVEMENT BEHAVIORS IN THE NEW ERA OF COMBINED THERAPIES**

**IFSO 2025 Santiago**

Combined Therapies, The Dawn of a New Era

[aurelie.baillot@uqo.ca](mailto:aurelie.baillot@uqo.ca)

[ifso2025.org](https://ifso2025.org)

# Disclosure Slide



XXVIII IFSO  
World Congress

9-12 September 2025

Santiago, Chile

<input checked="" type="checkbox"/>	No, nothing to disclose
<input type="checkbox"/>	Yes, please specify:

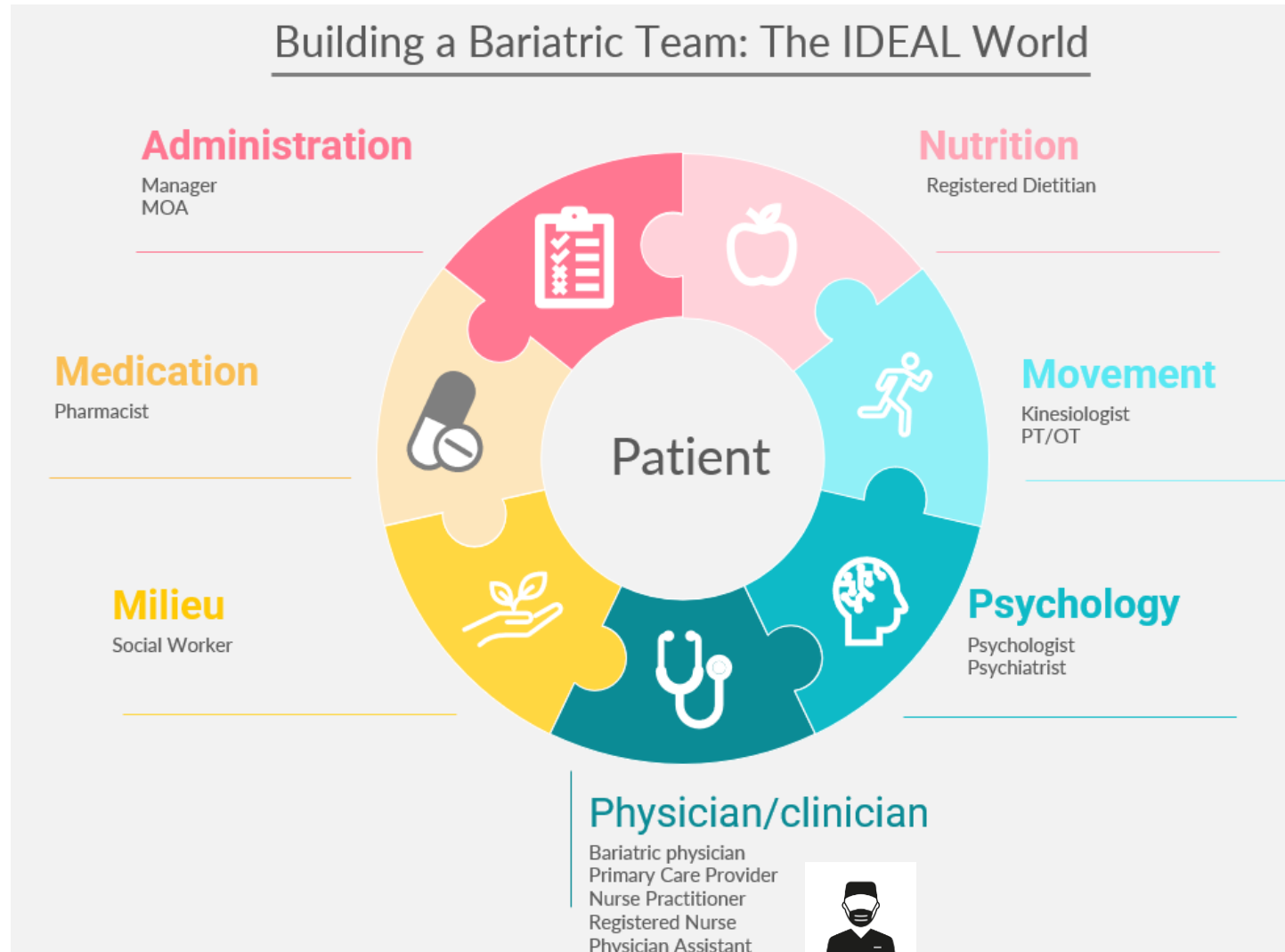


# ERA OF COMBINED THERAPIES



## XXVIII IFSO World Congress

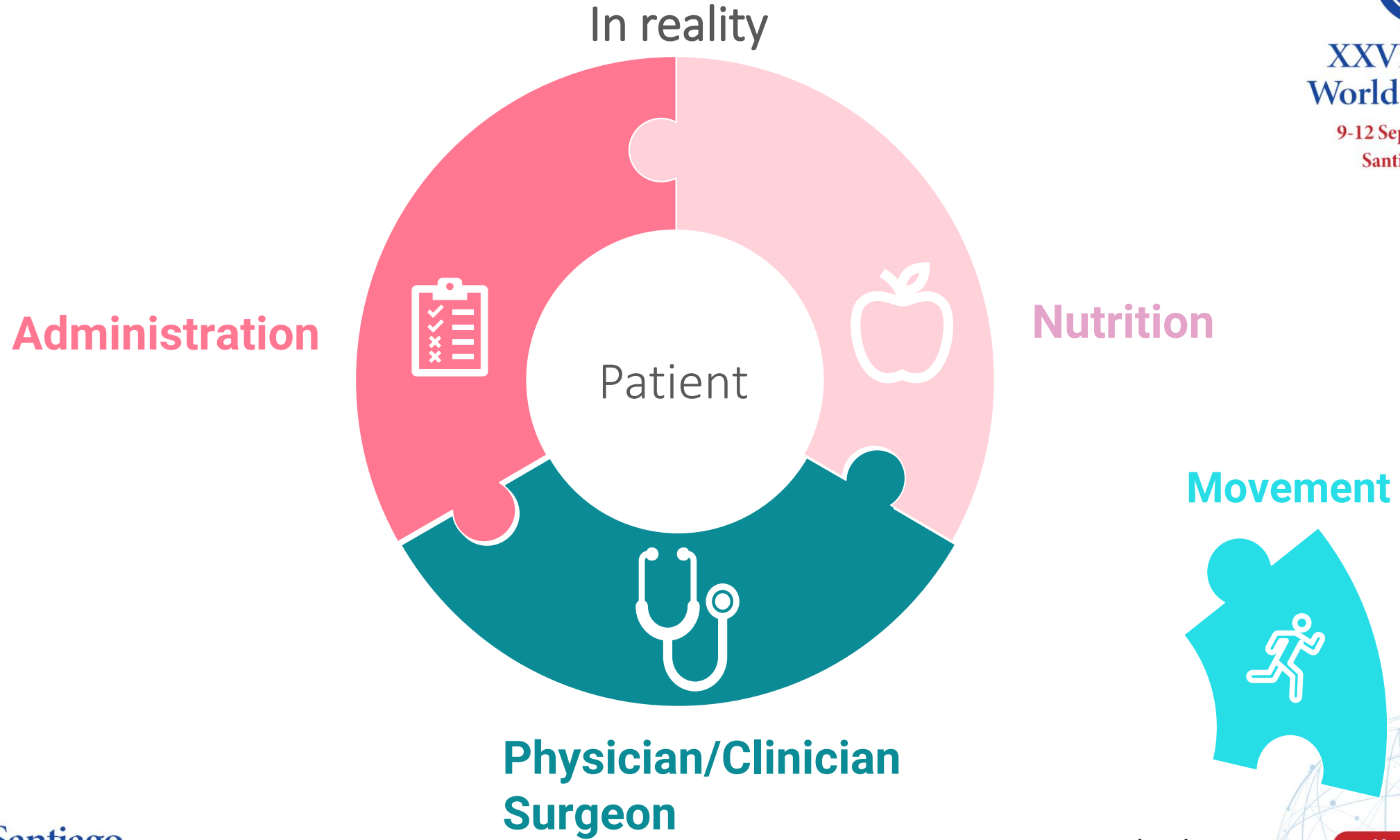
9-12 September 2025  
Santiago, Chile



# ERA OF COMBINED THERAPIES



XXVIII IFSO  
World Congress  
9-12 September 2025  
Santiago, Chile



# The importance of MVPA combined with MBS and OMM



SPECIAL COMMUNICATIONS



## Physical Activity and Excess Body Weight and Adiposity for Adults. American College of Sports Medicine Consensus Statement

JOHN M. JAKICIC<sup>1</sup>, CAROLINE M. APOVIAN<sup>2</sup>, DAHEIA J. BARR-ANDERSON<sup>3</sup>, ANITA P. COURCOULAS<sup>4</sup>, JOSEPH E. DONNELLY<sup>5</sup>, PANTELEIMON EKKEKAKIS<sup>6</sup>, MARK HOPKINS<sup>7</sup>, ESTELLE VICTORIA LAMBERT<sup>7,8</sup>, MELISSA A. NAPOLITANO<sup>9</sup>, and STELLA L. VOLPE<sup>10</sup>

<sup>1</sup>University of Kansas Medical Center, Kansas City, KS; <sup>2</sup>Brigham and Women's Hospital, Boston, MA; <sup>3</sup>University of Minnesota, Minneapolis, MN; <sup>4</sup>University of Pittsburgh School of Medicine, Pittsburgh, PA; <sup>5</sup>Michigan State University, East Lansing, MI; <sup>6</sup>University of Leeds, UNITED KINGDOM; <sup>7</sup>University of Cape Town, SOUTH AFRICA; <sup>8</sup>University of Southern Queensland, Ipswich, AUSTRALIA; <sup>9</sup>George Washington University, Washington, DC; and <sup>10</sup>Virginia Polytechnic Institute and State University, Blacksburg, VA

Include both aerobic and resistance modes of physical activity with MBS and obesity management medications (OMM).

- Optimize OMM and MBS effects :



- Additional effects : weight recurrence



# The importance of MVPA combined with OMM

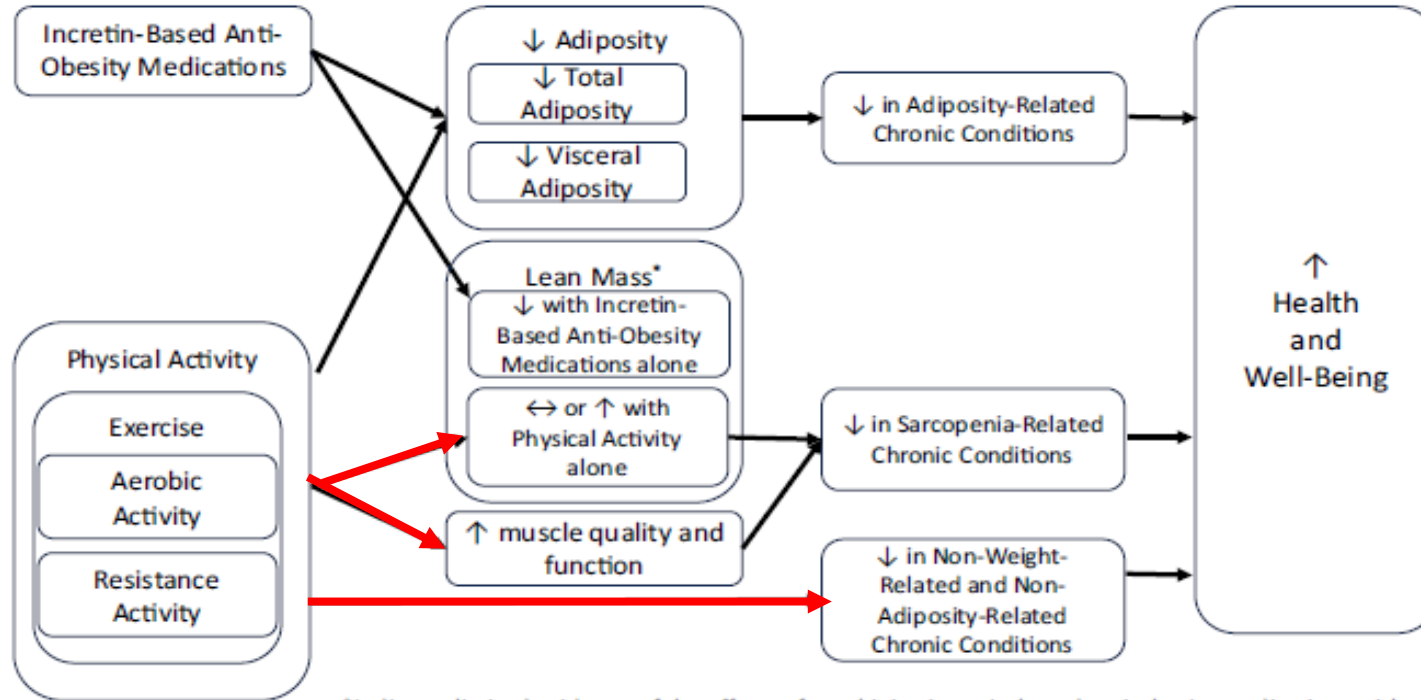


PERSPECTIVE

Obesity THE OBESITY SOCIETY WILEY

## Physical activity in the new era of antiobesity medications

John M. Jakicic<sup>1</sup> | Renee J. Rogers<sup>1</sup> | Timothy S. Church<sup>2</sup>



\*Indicates limited evidence of the effects of combining incretin-based anti-obesity medications with physical activity on the change in lean mass.



# The importance of MVPA combined with OMM



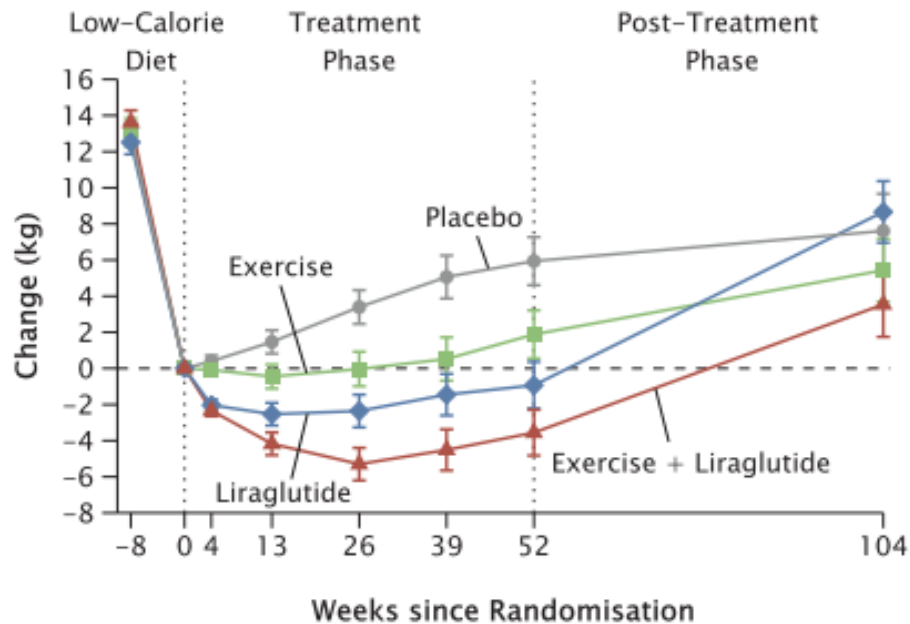
Healthy weight loss maintenance with exercise, GLP-1 receptor agonist, or both combined followed by one year without treatment: a post-treatment analysis of a randomised placebo-controlled trial



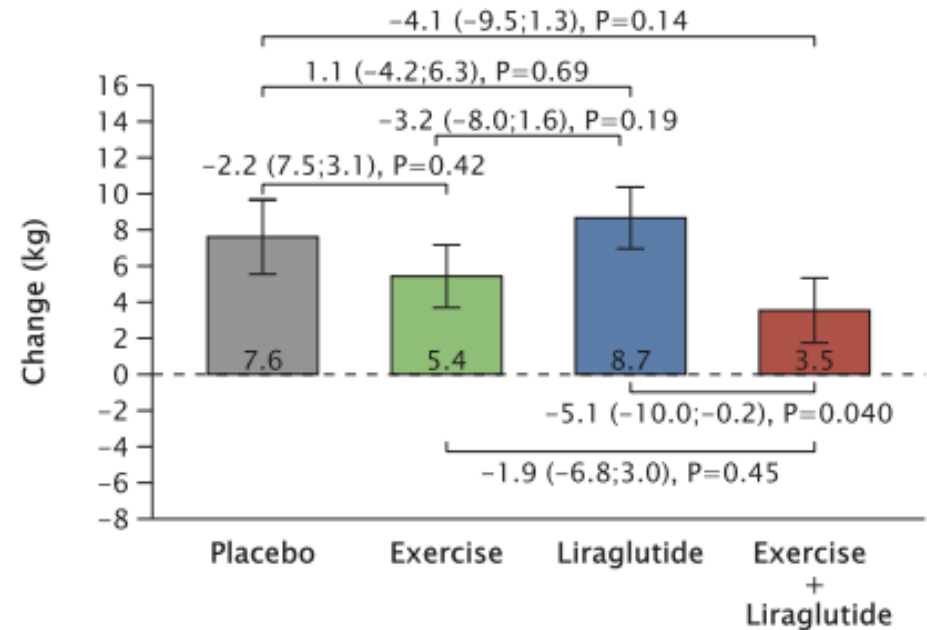
Simon Birk Kjær Jensen,<sup>a</sup> Martin Bæk Blond,<sup>b</sup> Rasmus Michael Sandsdal,<sup>a</sup> Lisa Møller Olsen,<sup>a</sup> Christian Rimer Juhl,<sup>a</sup> Julie Rehné Lundgren,<sup>a</sup> Charlotte Janus,<sup>a</sup> Bente Merete Stallknecht,<sup>a</sup> Jens Juul Holst,<sup>a,c</sup> Sten Madsbad,<sup>d</sup> and Signe Sørensen Tørekov<sup>a,\*</sup>



**A** Body Weight Change from Randomisation (Week 0)



**B** Weight Regain from Week 0 to 104



# The Benefits of Exercise Training in Combination With Weight Loss Therapies

Bryan C. Jiang and Dennis T. Villareal

*Diabetes* 2025;74(00):1–8 | <https://doi.org/10.2337/dbi25-0001>



## The Benefits of Exercise Training in Combination with Weight Loss Therapies

Jiang et al., 2025 | Diabetes

### Calorie Restriction

achieved through lifestyle intervention, bariatric surgery, and incretin-based therapies causes a decline in lean mass and bone mineral density.



### Aerobic Training

further improves cardiorespiratory fitness when performed alongside calorie restriction.



### Resistance Training

stimulates muscle protein synthesis even during negative energy balance and mitigates the negative effects of calorie restriction.



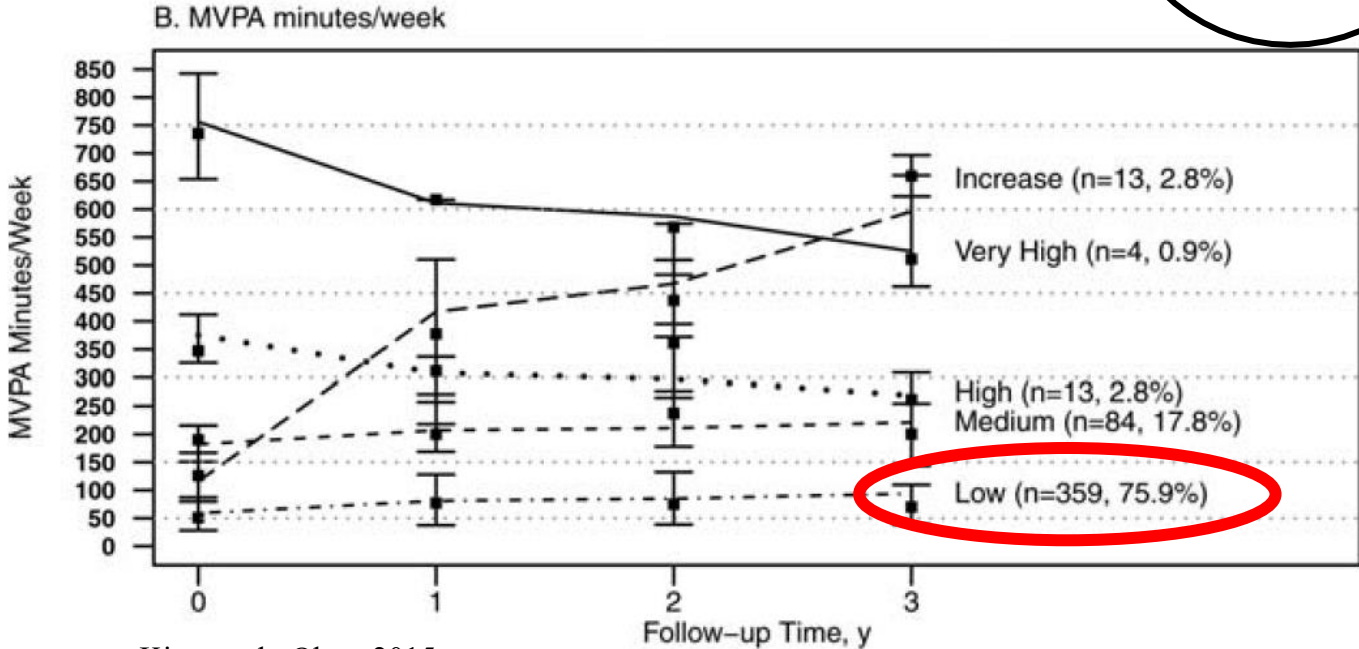
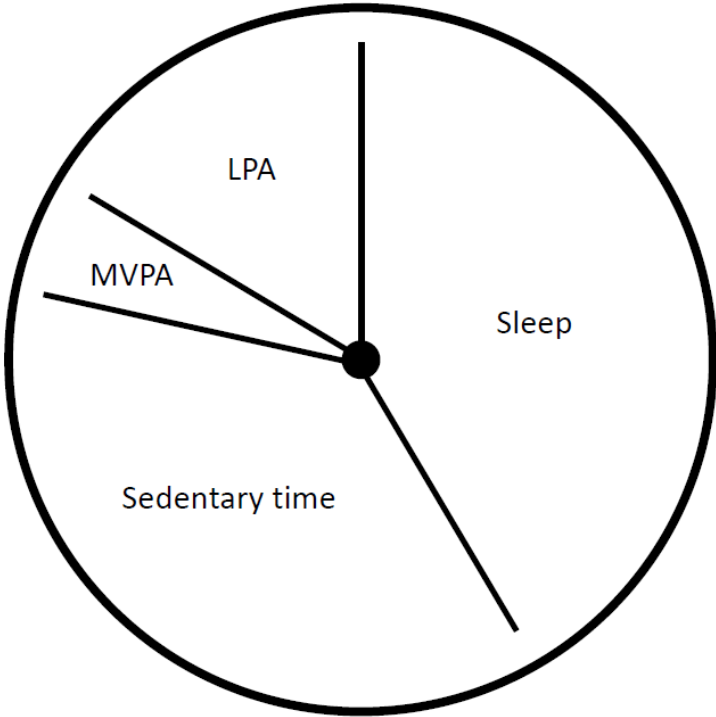
Combining both exercise modalities during calorie restriction provides the most optimal benefits for body composition and physical function.



ifso2025.org



# Beyond MVPA



King et al., *Obes.* 2015.

## 24h-period movement perspective

# Don't forget to consider LPA



- More accessible and realistic intensity + larger portion of the day
- ↘ risk of long-term conditions and mortality in adult population
- **Before and after MBS :**
  - + associated with better **HRQOL** (VT:  $\beta=3.6$ , SF  $\beta=7.2$ ) (pre-MBS)
  - + associated **insulin sensitivity** ( $\rho=.37$ ,  $p \leq .05$ )



The integration of LPA in MBS care including or not OMM = more realistic and sustainable approach to increase PA levels and improve long-term conditions.



# The importance of reduced sedentary behaviors



Tremblay et al. *International Journal of Behavioral Nutrition and Physical Activity*  
(2017) 14:75  
DOI 10.1186/s12966-017-0525-8

International Journal of Behavioral  
Nutrition and Physical Activity

RESEARCH

Open Access



## Sedentary Behavior Research Network (SBRN) – Terminology Consensus Project process and outcome

Mark S. Tremblay<sup>1\*</sup>, Salomé Aubert<sup>1</sup>, Joel D. Barnes<sup>1</sup>, Travis J. Saunders<sup>2</sup>, Valerie Carson<sup>3</sup>, Amy E. Latimer-Cheung<sup>4</sup>,  
Sébastien F.M. Chastin<sup>5,6</sup>, Teatske M. Altenburg<sup>7</sup>, Mai J.M. Chinapaw<sup>7</sup> and on behalf of SBRN Terminology  
Consensus Project Participants



“Sedentary behavior is any waking behavior characterized by an energy expenditure  $\leq 1.5$  metabolic equivalents (METs), while in a sitting, reclining or lying posture.”

# The importance of reduced sedentary behaviors



- Large portion of the day
- ↘ all-cause mortality in adult population

SCOPING REVIEW ON SB  
AND MBS (IFSO e-poster)

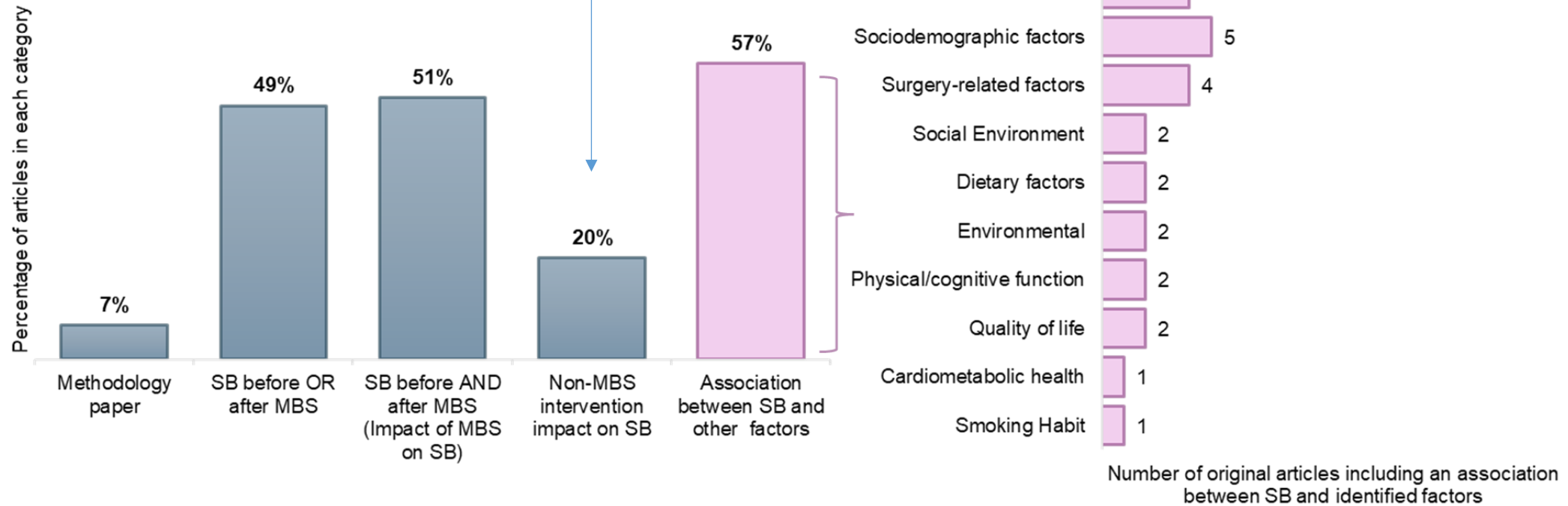
- **In MBS population :**
  - Less severe obesity and better cardiometabolic health (pre-MBS)
  - Greater post MBS weight-loss and lower weight recurrence
  - Higher ST seems - influence appetite and eating regulation, and HQOL

Addressing SB in MBS and OMM care represents an opportunity to increase activity levels.



**B-MOBILE** (Bond et al. 2015)  
ST : - 15-33 min/day

Only two interventions have targeted SB post-MBS



**Fig. 1:** Number of original articles per objective research categories (k=64), and variables associated with sedentary behaviors (k=20) (SB)

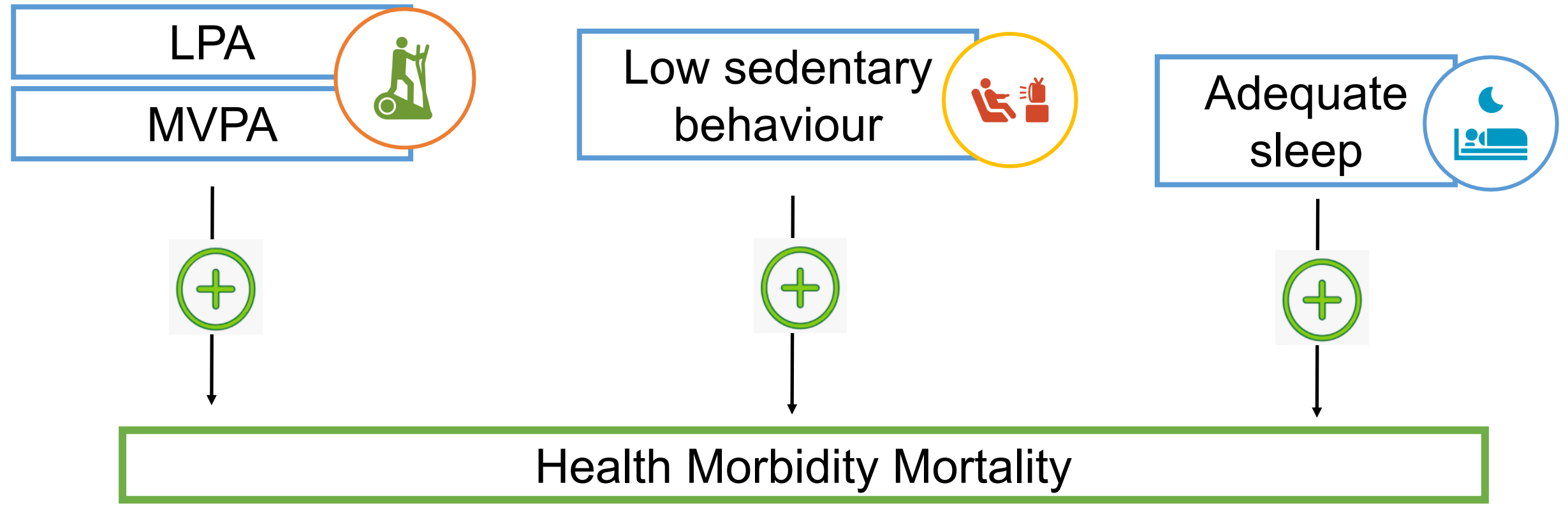
# The importance of adequate sleep



- Can enhance the success of weight loss interventions
- Can influence MBS and OMM benefits (e.g. recovery, weight-loss, cardiometabolic health)
- **In MBS population :**
  - Improved sleep duration and quality seems correlate with long-term weight-loss following MBS

Addressing a broader range of sleep dimensions than OSA (sleep regularity, and chronotype) could enhance long-term MBS and OMM success and patient well-being.

# Previous approach in movement behaviours and MBS



Movement behaviors have been examined in isolation with **no integrated approach**



XXVIII IFSO  
World Congress

9-12 September 2025  
Santiago, Chile

# Codependency of movements



A change in the amount of time spent in any one of these behaviours will change the amount of time spent in another behaviour

The benefits of PA are not the same if the activity is done at the expense of sleep or at the expense of sedentary behaviour



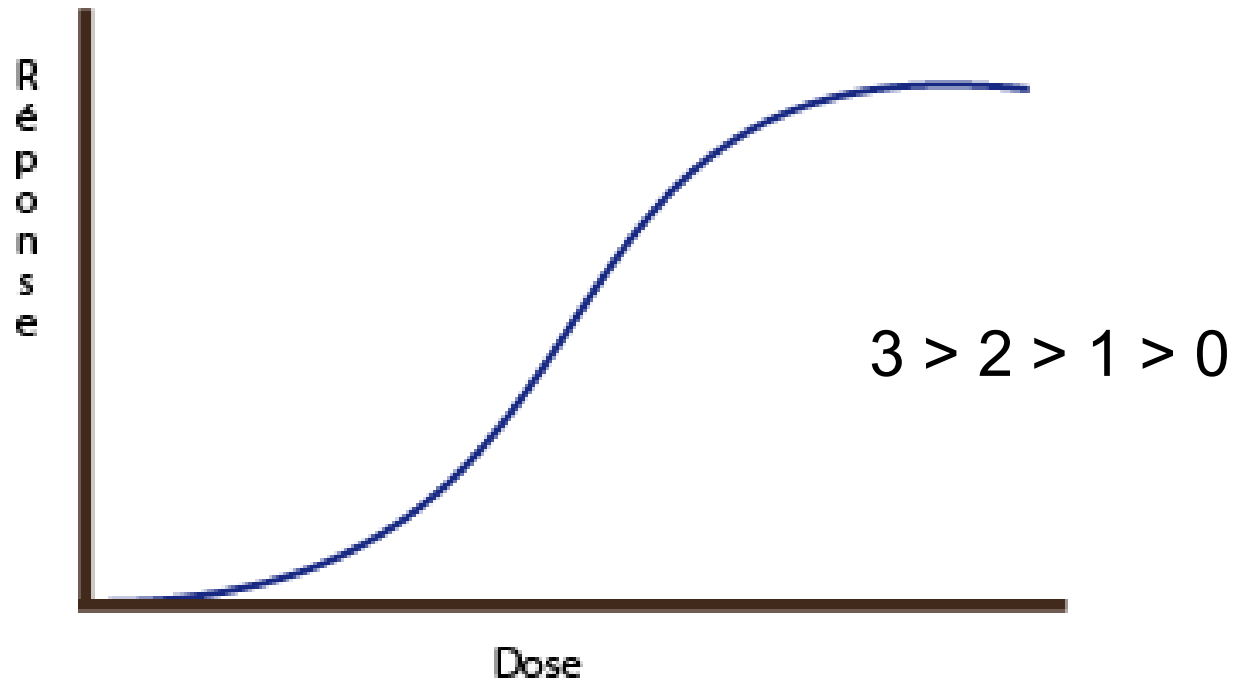
# The whole day matters!



XXVIII IFSO  
World Congress

9-12 September 2025  
Santiago, Chile

Courbe dose-réponse



[ifso2025.org](http://ifso2025.org)

# Silo approach = incomplete understanding

HOW change in one movement behavior influences time spent in the others ?

HOW movement behaviors relate to clinical MBS outcomes in the context of the others ?



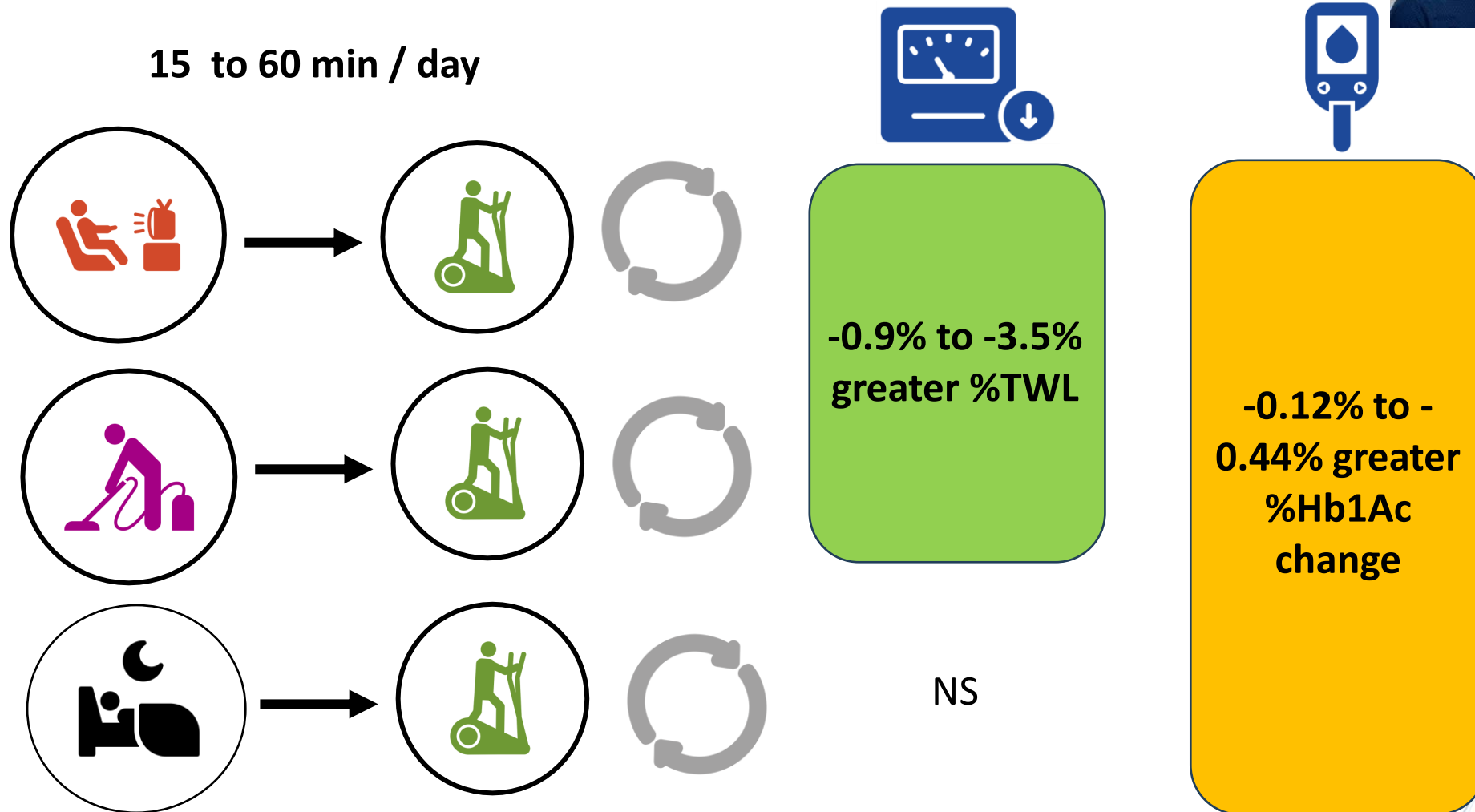
To account the **codependence** between each movement behavior = **compositional** isotemporal substitution analysis



# Does Hb1Ac before MBS and early weight loss after MBS differ based on compositional time reallocations between preoperative 24-hr movement behaviors?



9-12 September 2025  
Santiago, Chile



# Clinical and research gaps :



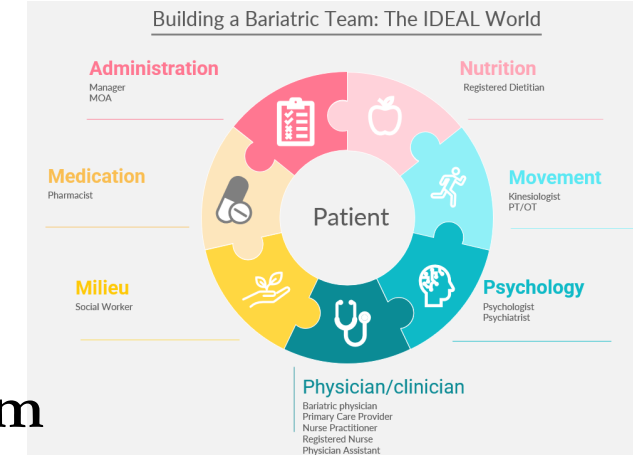
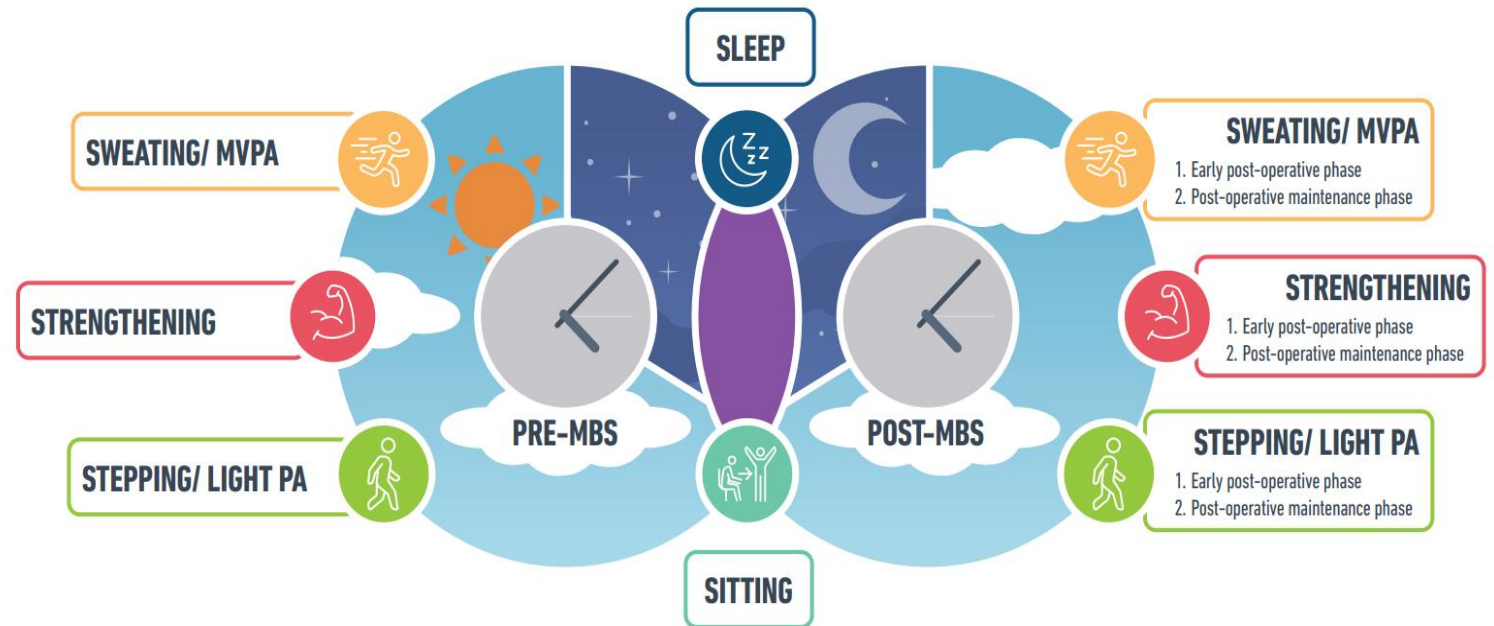
- **24h movement behaviors in the context of MBS :**
  - *Assessment of the 3 behaviours together*: validity, acceptability and compliance before and after MBS
  - *Changes in 24-hour movement* composition after MBS (description and health associations)
  - Beyond WL, consider *clinically-relevant and patient-oriented outcomes*
  - More *experimental studies* to test causality
  - *Intervention modalities* : simultaneous or sequential behavioral interventions, starting point ?
  - Beyond time and duration, consider *quality, type, context, etc.*
  - ...
- **24h movement behaviors in the area of combined therapies:**
  - MBS + GLP-1 + movement
  - MBS + GLP-1 + movement + protein intake

# CONCLUSION

1. All movements matter and should be addressed
2. Shifting the focus from MVPA to the 24-hour movement paradigm

- Recognizing the interdependence between movement behaviours
- More opportunities for intervention among individuals with varying abilities and preferences
- Superior health outcomes

*Visual conceptualization of the 24-hour movement behaviour using the 5S's concept from pre- to post-MBS.*



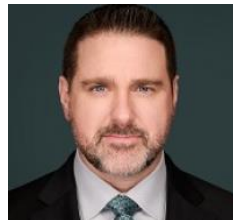


XXVIII IFSO  
World Congress  
9-12 September 2025  
Santiago, Chile

# Acknowledgments



Laboratoire de recherche collaborative  
en obésité et vie active  
Collaborative Obesity and Active Living  
Research Laboratory



Hartford HealthCare  
Digestive Health Institute  
Center for Obesity Research, Innovation, and Education (CORIE)



# XXVIII IFSO World Congress

9-12 September 2025  
Santiago, Chile



18-65 y

## A healthy 24 hours includes:

### PHYSICAL ACTIVITY

Performing a variety of types and intensities of physical activity, which includes:



- **Moderate to vigorous aerobic physical activities** such that there is an accumulation of at least 150 minutes per week
- Muscle strengthening activities using major muscle groups at least twice a week



- Several hours of **light physical activities**, including standing

### SLEEP



Getting 7 to 9 hours of good-quality sleep on a regular basis, with consistent bed and wake-up times

### SEDENTARY BEHAVIOUR



Limiting sedentary time to 8 hours or less, which includes:

- No more than 3 hours of recreational screen time
- Breaking up long periods of sitting as often as possible



XVIII IFSO  
World Congress

12-14 September 2025  
Santiago, Chile



[ifso2025.org](http://ifso2025.org)

Replacing sedentary behaviour with additional physical activity and trading light physical activity for

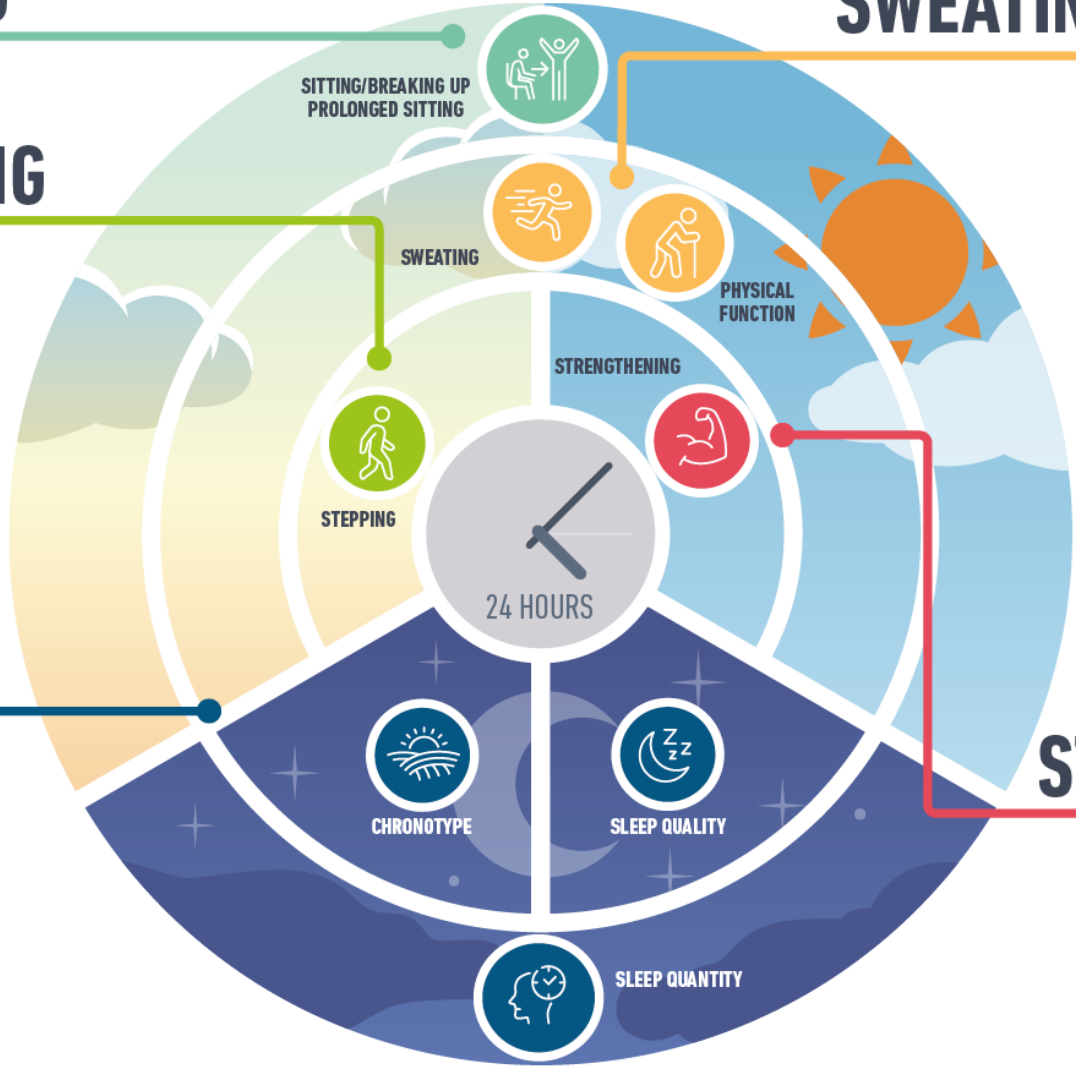
# SITTING

# SWEATING

# STEPPING

# SLEEP

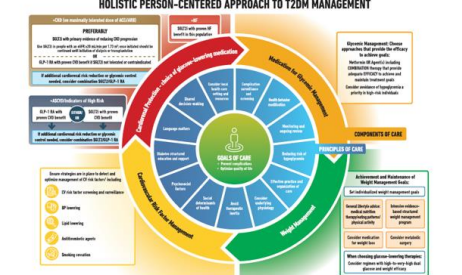
# STRENGTHENING



## Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)

Melanie J. Davies, Vanita R. Arora, Billy S. Collins, Robert A. Gabbay, Jennifer Green, Nisa M. Maruthur, Sylvia E. Rosas, Stefano Del Prato, Chantal Mathieu, Getrude Mingrone, Peter Rossing, Tsvetelina Tankova, Apostolos Tzapas, and John B. Buse

Diabetes Care 2022;45(11):2763-2796 | <https://doi.org/10.2337/ab25-0034>



Diabetologia (2022) 65:1925–1966  
<https://doi.org/10.1007/s00125-022-05787-2>

### CONSENSUS REPORT

## Management of hyperglycaemia in type 2 diabetes, 2022. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)

Melanie J. Davies<sup>1,2</sup>, Vanita R. Arora<sup>3</sup>, Billy S. Collins<sup>4</sup>, Robert A. Gabbay<sup>5</sup>, Jennifer Green<sup>6</sup>, Nisa M. Maruthur<sup>7</sup>, Sylvia E. Rosas<sup>8</sup>, Stefano Del Prato<sup>9</sup>, Chantal Mathieu<sup>10</sup>, Getrude Mingrone<sup>11</sup>, Peter Rossing<sup>12</sup>, Tsvetelina Tankova<sup>13</sup>, Apostolos Tzapas<sup>14</sup>, John B. Buse<sup>15</sup>

Received: 7 August 2022 / Accepted: 18 August 2022 / Published online: 24 September 2022  
 © American Diabetes Association and the European Association for the Study of Diabetes 2022

**Abstract**  
 The American Diabetes Association and the European Association for the Study of Diabetes convened a panel to update the previous consensus statements on the management of hyperglycaemia in type 2 diabetes in adults, published since 2006 and last updated in 2019. The target audience is the full spectrum of the professional healthcare team providing diabetes care in the USA and Europe. A systematic examination of publications since 2019 informed new recommendations. These include additional focus on social determinants of health, the healthcare system and physical activity behaviors including sleep. There is a greater emphasis on weight management as part of the holistic approach to diabetes management. The results of cardiovascular and kidney outcomes trials involving sodium glucose cotransporter-2 inhibitors and glagon-like peptide-1 receptor agonists, including assessment of subgroups, inform broader recommendations for cardiovascular protection in people with diabetes at high risk of cardiovascular disease. After a summary listing of consensus recommendations, practical tips for implementation are provided.

**Keywords** Cardiovascular disease · Chronic kidney disease · Glucose-lowering therapy · Guidelines · Heart failure · Holistic care · Person-centred care · Social determinants of health · Type 2 diabetes mellitus · Weight management

Abbreviations	
BCGM	Blood glucose monitoring
CGM	Continuous glucose monitoring
CSII	Continuous subcutaneous insulin infusion
CVOT	Cardiovascular outcomes trial
DKA	Diabetic ketoacidosis
DPP-4i	Dipeptidyl peptidase-4 inhibitors
DSEMS	Diabetes self-management education and support
ETD	Estimated treatment difference
GLP-1 RA	Glucagon-like peptide-1 receptor agonists
GLP-1 RA	Glucagon-like peptide-1 receptor agonists
HF	Heart failure
HIF	Hospitalizations for heart failure
MACE	Major adverse cardiovascular events
MNT	Medical nutrition therapy
NAFLD	Non-alcoholic fatty liver disease
NASH	Non-alcoholic steatohepatitis
SGLT2i	Sodium glucose cotransporter-2 inhibitor

Extended author information available on the last page of the article.