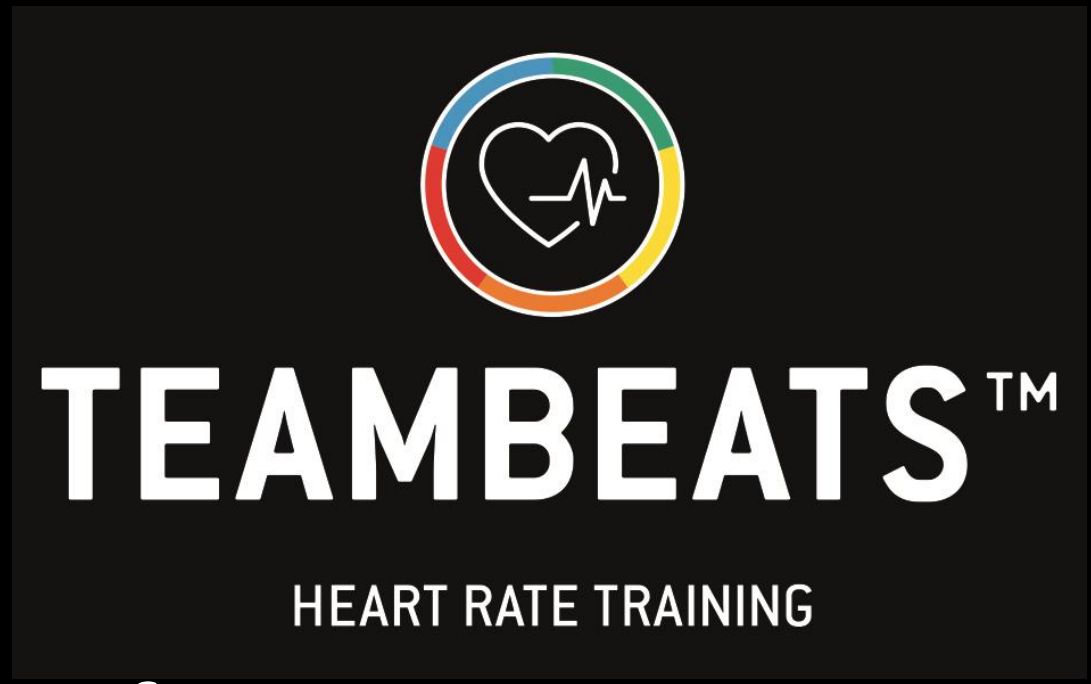
THE CONNECTED
WELLNESS EXPERIENCE




# Effective Use Of Heart Rate Training

HEART RATE BASED TRAINING
SUPPORT DOCUMENT v1.0

# HEART RATE TRAINING:
## Workshop aim

The aim of the workshop is to understand how to effectively use Heart Rate training methods for individual and group exercise.

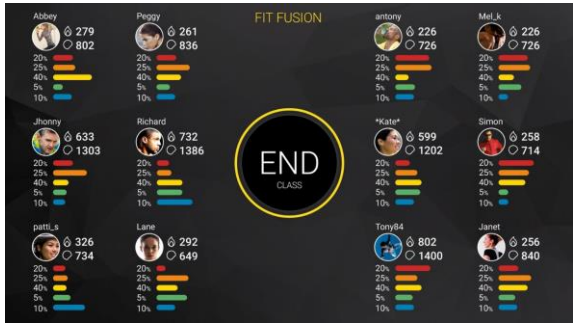
# HEART RATE TRAINING:
## Workshop objectives

**Objectives**

- Explore heart rate training zones linked to fundamentals of movement
- Have an extended knowledge of exercises that can be used for effective heart rate training
- Be able to programme effectively using different heart rate training methods to achieve specific objectives


**Methods of Learning**

- Theory and discussion
- Practical demonstrations
- Practical scenarios




# METHODOLOGY

# HEART RATE TRAINING:
## QUIZ

1. **What is heart rate?**
2. **How do Heart Rate monitors measure heart rate?**
3. **What are 3 benefits of monitoring heart rate during exercise?**
4. **What is $VO_2$ and how does it relate to heart rate?**
5. **HR ZONES. At what % of maximum heart rate (within a 10% range) do most people reach their anaerobic threshold?**
6. **How can heart rate monitoring be used to measure fitness improvement over time?**
7. **What is heart rate variability and how is it useful for exercise programming?**

# HEART RATE TRAINING:

## Defining and measuring Heart Rate

1. WHAT IS HEART RATE?

Heart rate is defined as the number of times the heart beats in one minute, expressed in the unit beats per minute (bpm).

2. HOW DO HEART RATE MONITORS MEASURE HEART RATE?

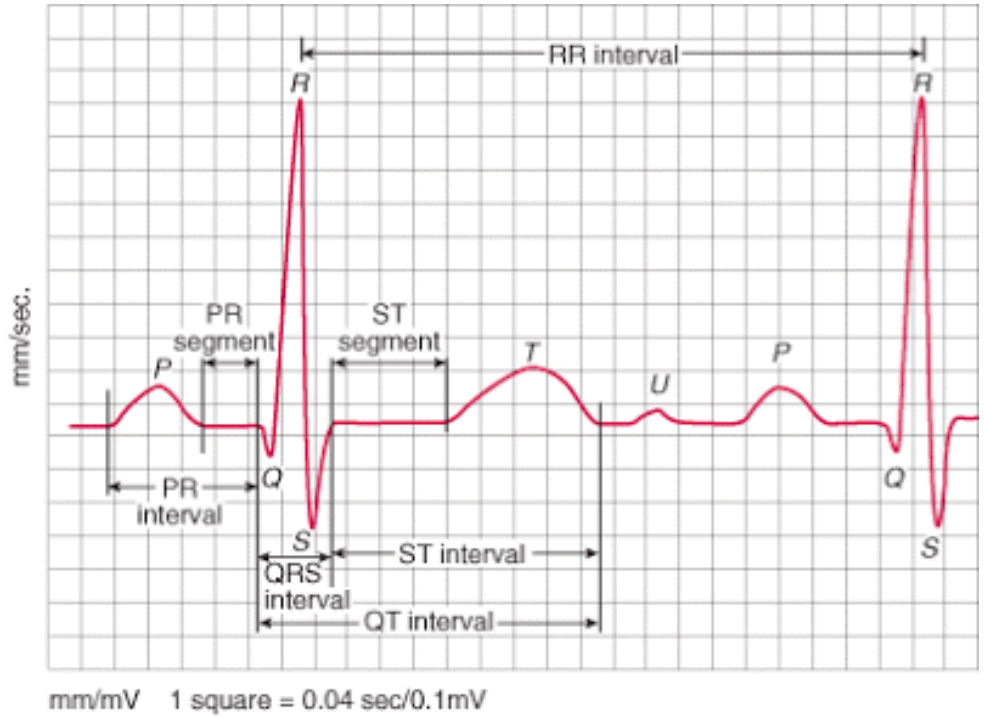
In practice, most heart rate monitors worn around the chest measure the duration of each beat of the heart, from a standardized point in one cardiac cycle to the same point at the start of the next cycle known as the R-R interval. They can do this because of the predictable electrical activity associated with each phase of the cardiac cycle (the PQRST waves).

Newer style HRMs that sit on the arm or wrist measure heart rate differently. They use optical sensors to ‘see’ changes in blood flow through the major arteries of the arm and measure the interval between each pulse of blood. This is similar in principle to using your fingers to feel a pulse and count it manually but is more convenient and accurate than manual pulse monitoring, especially during exercise. These optical sensors are not as reliable as a chest belt that monitors the activity of the heart itself and are prone to disruption if light gets behind the monitor when arms are moved.

# HEART RATE TRAINING:

## Electrical activity of the heart

The R-R interval is used as a measure of the duration of one heartbeat. Most HRMs are capable of updating the displayed heart rate in bpm based on the duration of heart beats over the past 5 seconds or fewer. This is important as it means there is no need to take a full minute's or even 15 second pulse to get a heart rate reading. It does also explain why there is a slight delay between what the heart is actually doing and the heart rate displayed on a watch or TEAMBEATS screen.



## 3. WHAT ARE BENEFITS OF MONITORING HEART RATE DURING EXERCISE?

1. Safety – by knowing what is happening with the heart it provides an early warning of any abnormal responses and prevents over-exertion.

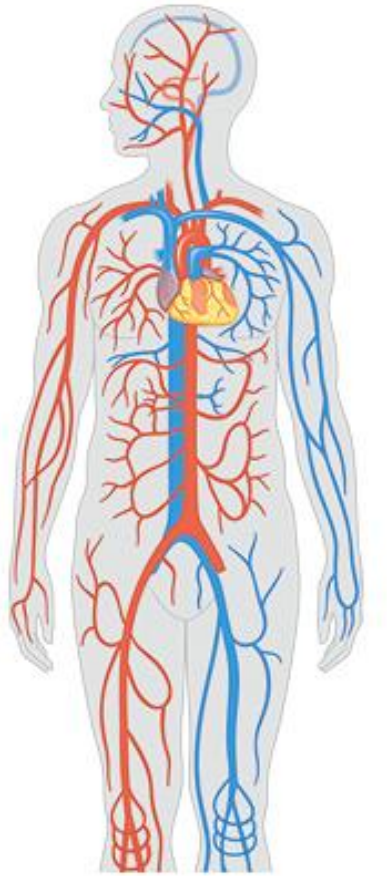
2. Motivation - It can hold you accountable for working at an effective intensity to achieve your goals. If you're consistently not reaching your target heart rate zone, you know you're not pushing hard enough to see progress.

3. Seeing results - Recording your heart rate during exercise also allows you to monitor progress over time (more about this in the answer to question 6)

4. Training at the right intensity for the results you want - Measuring your heart rate during exercises lets you know the intensity/effort level you're exercising at and the physiological changes this is likely to cause in your body. Once you know your heart rate training zones, you know exactly what your heart rate needs to be to train in line with your goals.

# HEART RATE TRAINING:

## Benefits in the Cardiovascular system



Short term:

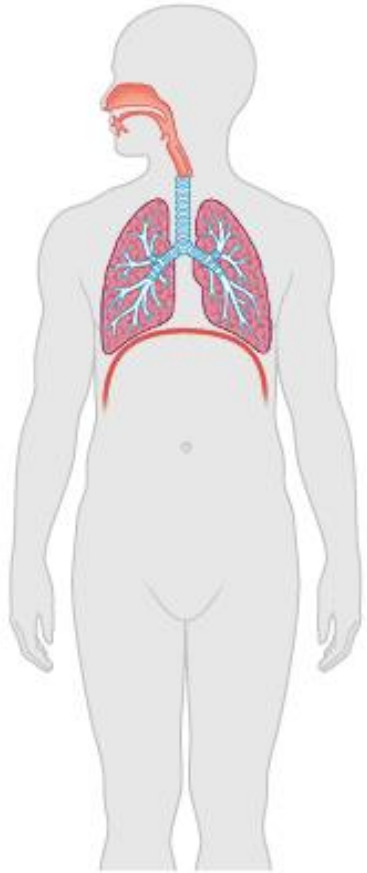
- Increased heart rate
- Increased blood pressure
- Increased Venous Return

Long term:

- Stronger cardiac muscle
- Increased Stroke Volume
- Increased Cardiac Output
- More capillaries in the muscles
- Risk of cardiovascular disease is reduced
- Blood pressure normalised

# HEART RATE TRAINING:

## Benefits in the respiratory system



Short term:

- Increased breathing rate
- Increased Tidal Volume

Long term:

- Improved muscle contraction e.g. diaphragm
- Improved Vital Capacity
- Increased number of alveoli

## 4. WHAT IS $VO_2$ AND HOW DOES IT RELATE TO HEART RATE?

$VO_2$ is the volume of oxygen being taken in and utilized by the body at a point in time. You may be familiar with the term $VO_2$ max as a result of fitness tests, which is the maximum amount of oxygen the body can take up and use, considered the gold standard measurement of aerobic fitness (although not the best predictor of performance).

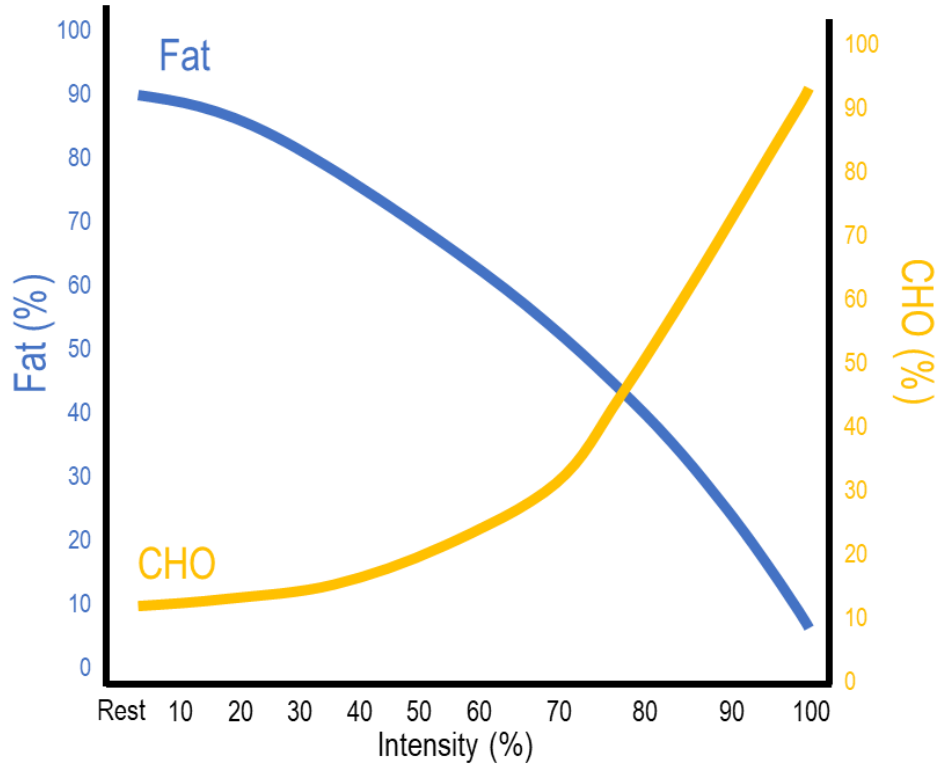
Exercise physiologists use measurement of $VO_2$ when conducting exercise testing in laboratories as it is the most accurate way to measure how the body is producing energy i.e. what metabolic pathways are being used. In the field we are able to use heart rate monitoring as a proxy for $VO_2$ measurement because of the linear relationship between the two measurements.

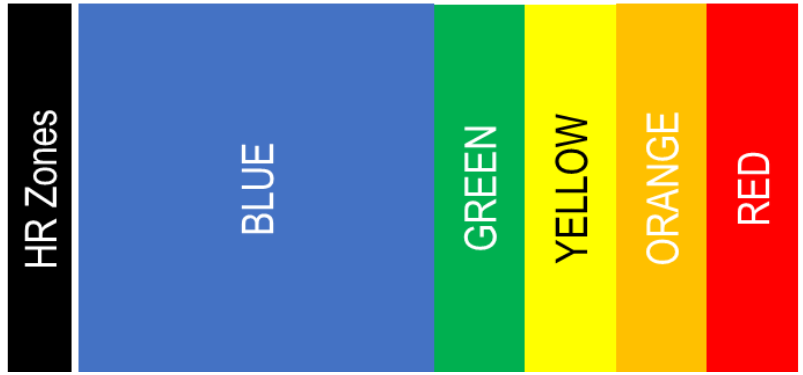
**HEART RATE TRAINING:**
FUEL SOURCES

When exercising, carbohydrates (glucose) and fats are used as fuel sources simultaneously. Their relative contribution depends on a variety of factors including duration of exercise and also intensity.

Typically, the longer the time spent exercising (ie. at a lower intensity), the higher the contribution of **FAT** as an energy source.

With increasing intensity of an exercise/training, the body utilises more **CARBOHYDRATES** as a fuel source and decreases fat metabolization.



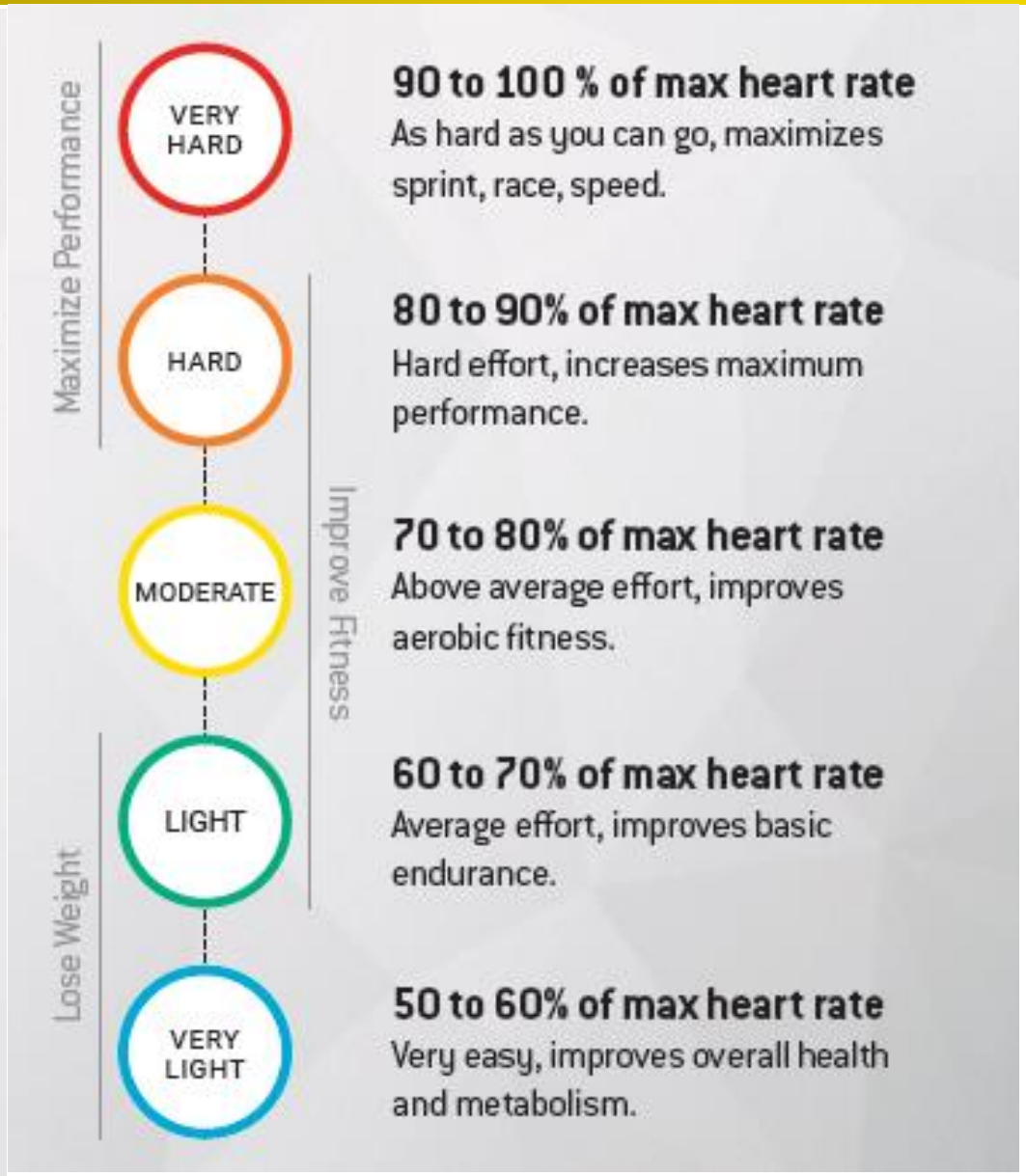
# HEART RATE TRAINING:
## THE ZONES

The Training Zones:

- represent the full range of physiological responses to exercise, to adequately describe the different types of training required to meet the demands and the goals of training.
- are used to monitor both current performance and progress over time.
- are relative to a user's **Maximum Heart Rate (max HR)** or **Functional Threshold Power (FTP)**
  - **%max HR** zones are based on the current HR value in relation to the max HR value; the % max HR value is displayed only if the user age is known.
  - RL Gellish: HR MAX = 206.9 - (0.67 x age)
  - **Cycling FTP zones** are based on current power in relation to the individual FTP value

HOW CAN WE PROGRAM USING HR?

# HEART RATE TRAINING:
THE ZONES




## TRAIN BY COLOUR – INDIVIDUAL PERFORMANCE VALUES

TRAIN BY COLOUR SPECIFIC AND PERSONALISED INDIVIDUAL PEROFRMANCE VALUES

Five specific colour zones to help tailor and focus your training efforts.

| COLOUR | ZONE |
|---|---|
| BLUE | ACTIVE RECOVERY |
| GREEN | ENDURANCE |
| YELLOW | TIME |
| ORANGE | THRESHOLD |
| RED | ANAEROBIC/POWER |

**HEART RATE TRAINING:**
THE ZONES EXPLAINED

| COLOUR | ZONE | % MAX HEART RATE |
|---|---|---|
| BLUE | ACTIVE RECOVERY | ≤60% |
| GREEN | ENDURANCE | 61-70% |

## THE ACTIVE RECOVERY / ENDURANCE ZONES: <60% - 70%

- THIS ZONE DEVELOPS BASIC ENDURANCE AND AEROBIC CAPACITY.
- ADVANTAGE TO TRAINING IN THIS ZONE IS THAT WHILE YOU ARE HAPPILY FAT BURNING YOU MAY LOSE WEIGHT AND YOU WILL BE ALLOWING YOUR MUSCLES TO RE-ENERGISE WITH GLYCOGEN, WHICH HAS BEEN EXPENDED DURING THOSE HIGHER INTENSITY BASED WORKOUTS.

**HEART RATE TRAINING:**
THE ZONES EXPLAINED

| COLOUR | ZONE | % MAX HEART RATE |
|---|---|---|
| YELLOW | TIME | 71-80% |

## THE AEROBIC / TIME ZONE: 71% - 80%

- THIS ZONE WILL DEVELOP YOUR CARDIOVASCULAR SYSTEM THE
- IT DEVELOPS THE BODY'S ABILITY TO TRANSPORT OXYGEN TO, AND CARBON DIOXIDE AWAY FROM, THE WORKING MUSCLES CAN BE DEVELOPED AND IMPROVED AS YOU BECOME FITTER AND STRONGER
- FROM TRAINING IN THIS ZONE YOUR BODY WILL START TO ADAPT AND MAXIMISE FAT BURNING AND IMPROVED AEROBIC CAPACITY

**HEART RATE TRAINING:**
THE ZONES EXPLAINED

| COLOUR | ZONE | % MAX HEART RATE |
|---|---|---|
| ORANGE | THRESHOLD | 81-90% |

# THE ANAEROBIC THRESHOLD ZONE: 81% - 90%

- THIS ZONE WILL DEVELOP YOUR LACTIC ACID SYSTEM
- YOUR INDIVIDUAL ANAEROBIC THRESHOLD (IS FOUND DURING THESE HEART RATES, THE AMOUNT OF FAT BEING UTILISED AS THE MAIN SOURCE OF ENERGY IS GREATLY REDUCED AND GLYCOGEN STORED IN THE MUSCLE IS PREDOMINANTLY USED ONE OF THE BY PRODUCTS OF BURNING THIS GLYCOGEN IS LACTIC ACID THERE IS A POINT AT WHICH THE BODY CAN NO LONGER REMOVE THE LACTIC ACID FROM THE WORKING MUSCLES QUICKLY ENOUGH THIS IS YOUR ANAEROBIC THRESHOLD
- THROUGH THE CORRECT TRAINING, IT IS POSSIBLE TO DELAY THE **AT** BY BEING ABLE TO INCREASE YOUR ABILITY TO DEAL WITH THE LACTIC ACID FOR A LONGER PERIOD OF TIME OR BY PUSHING THE **AT** HIGHER

**HEART RATE TRAINING:**
THE ZONES EXPLAINED

| COLOUR | ZONE | % MAX HEART RATE |
|---|---|---|
| RED | $VO2_{MAX}$ | 91-100% |
| | ANAEROBIC | |
| | NEUROMUSCULAR POWER | NA |

# THE ANAEROBIC VO2MAX ZONE: 91% - 100%

- TRAINING IN THIS ZONE WILL ONLY BE POSSIBLE FOR SHORT PERIODS IT EFFECTIVELY TRAINS YOUR FAST TWITCH MUSCLE FIBRES AND HELPS TO DEVELOP SPEED
- THIS ZONE IS RESERVED FOR INTERVAL TRAINING AND ONLY THE VERY FIT ARE ABLE TO TRAIN EFFECTIVELY WITHIN THIS ZONE

## HEART RATE TRAINING:
SUMMARY

- **TEAMBEATS** provides facilities with the ability to conduct group training sessions with the transparency of intensity for all individuals taking part.
- Conducting HR based training sessions provides members with a tool to quantify their work and progress.
- This leads to a personalised innovative training experience based on the individual's needs and abilities.

# HEART RATE TRAINING:
Group workout design

*A group workout is designed for a class where participants work simultaneously.*

*Group workout is based on **duration** (not repetitions). Or Heart rate prescription work*

*A group workout can have:*

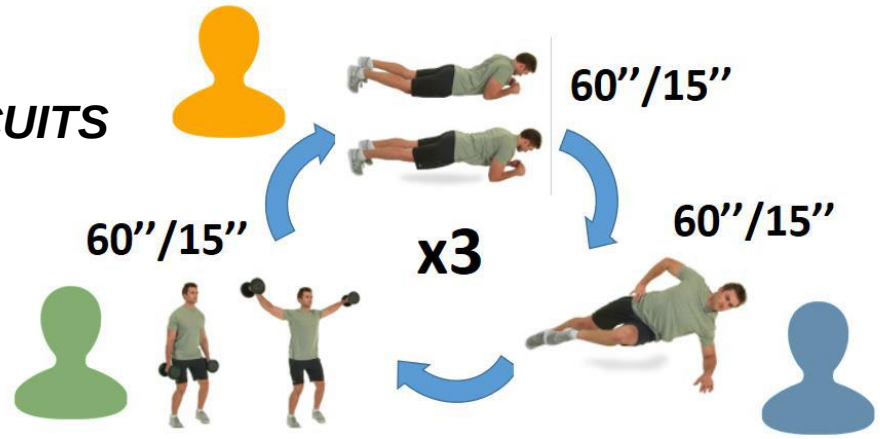
1. ***CIRCUITS***
2. ***SUPER SETS***
3. ***SEQUENCES***
4. ***SINGLE EXERCISES***

*All information about **REP TARGETS** and **WORKLOAD** are added as **INSTRUCTIONS***

*Circuits have the same duration for each exercise.*

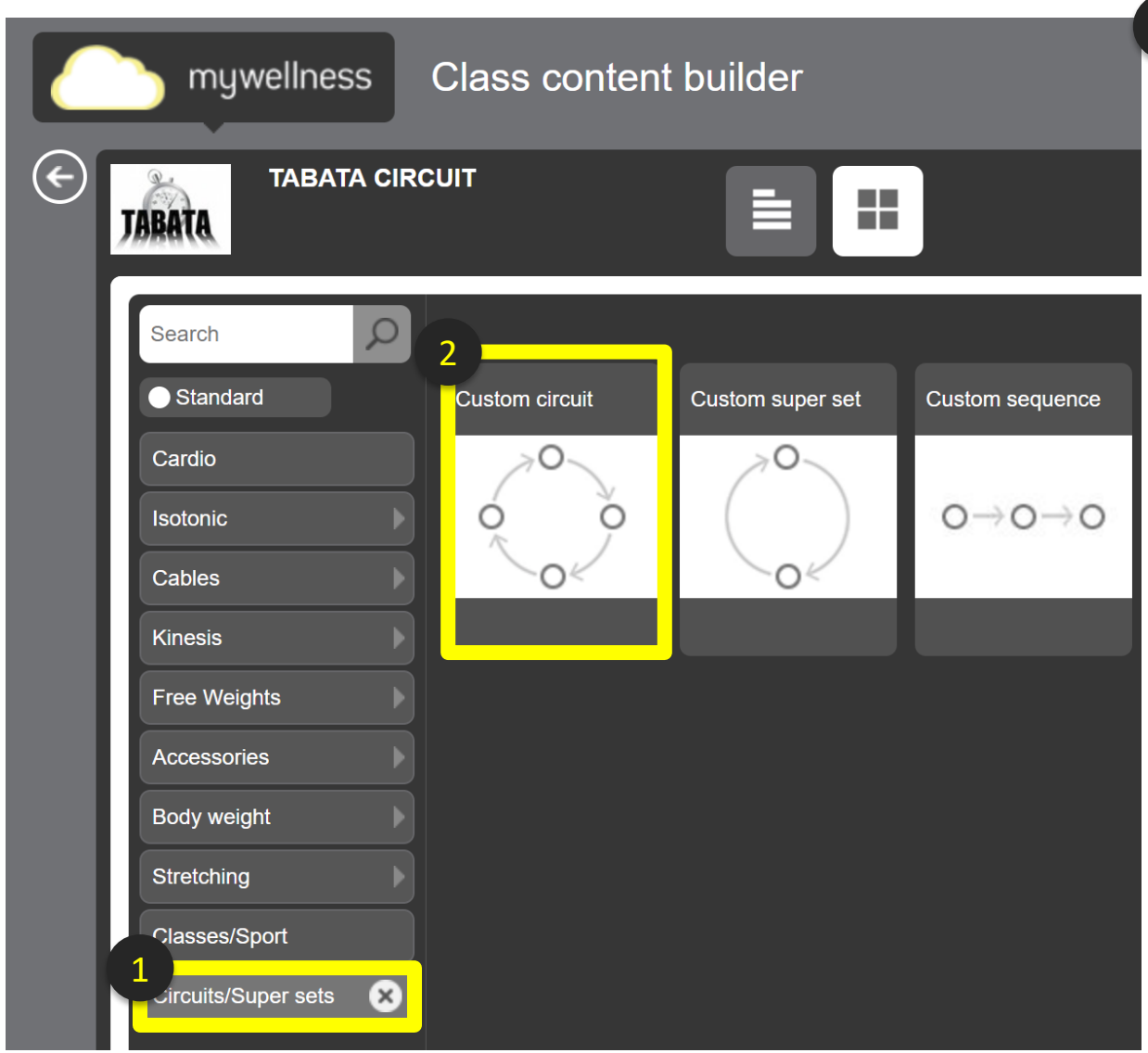
*Sequences can have different durations for each exercise.*

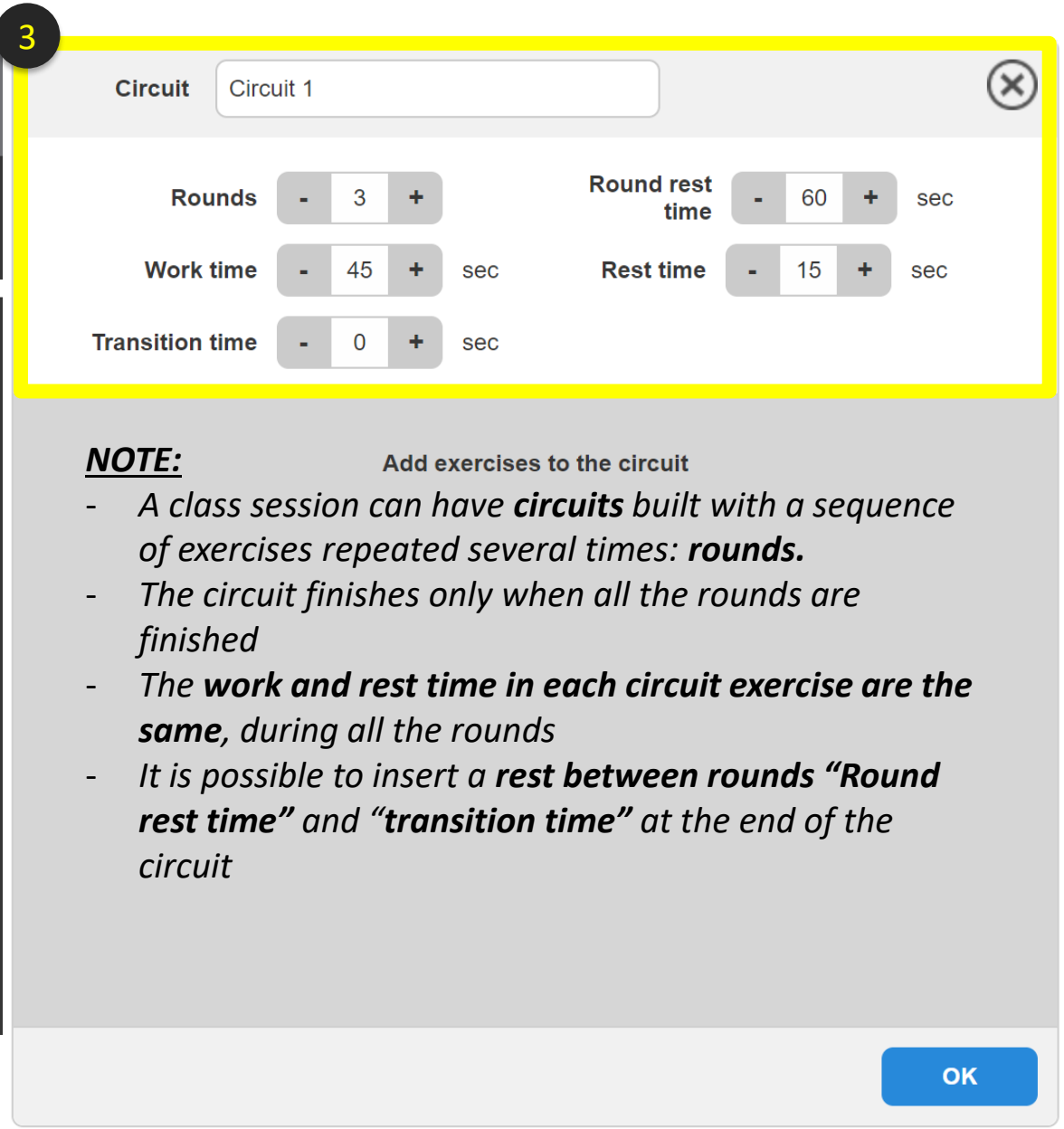
1 ***CIRCUITS***




3 ***SEQUENCES***

# Circuit Design: Circuits/Super sets > Custom circuit > Specify circuit details

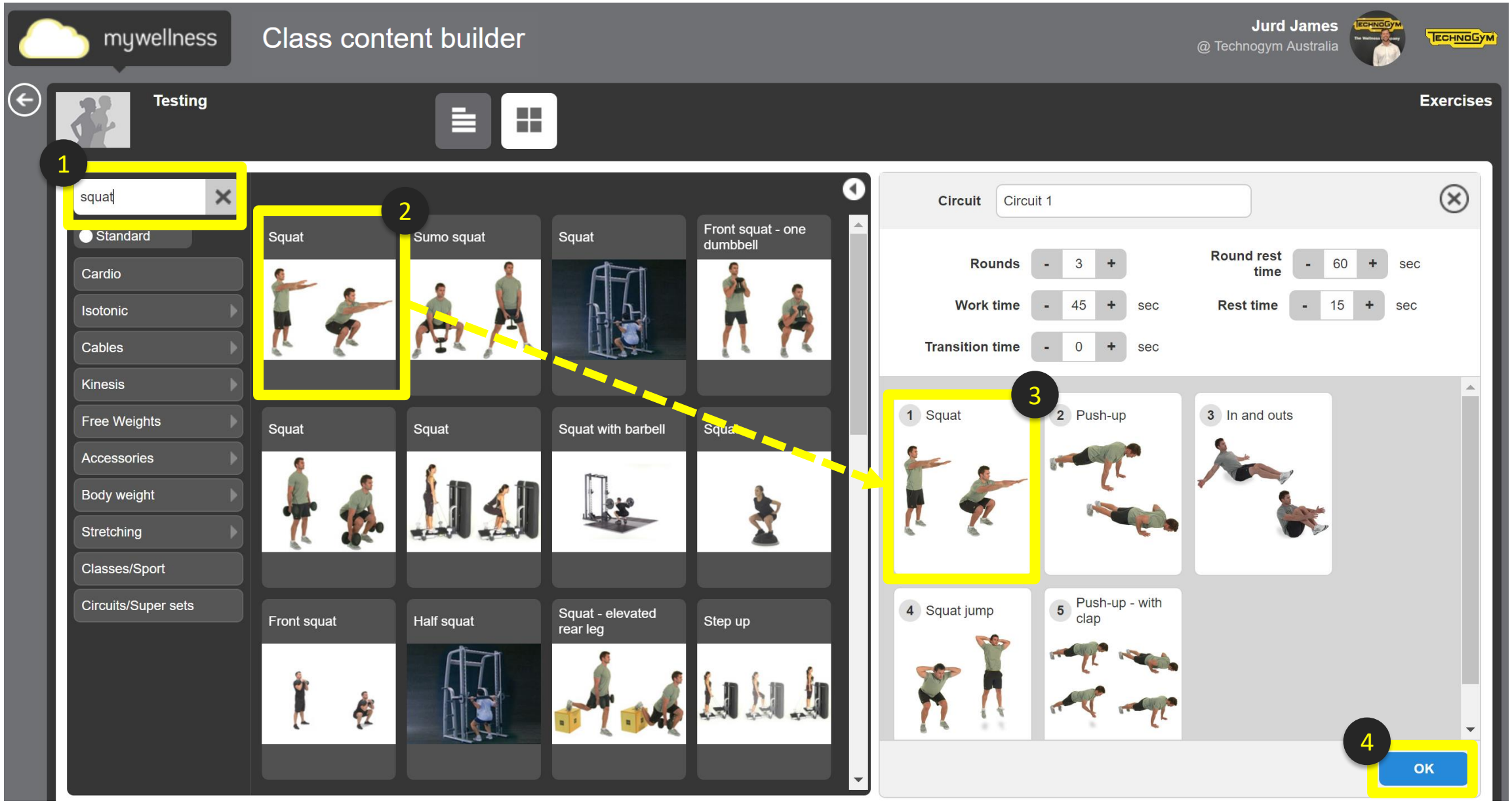


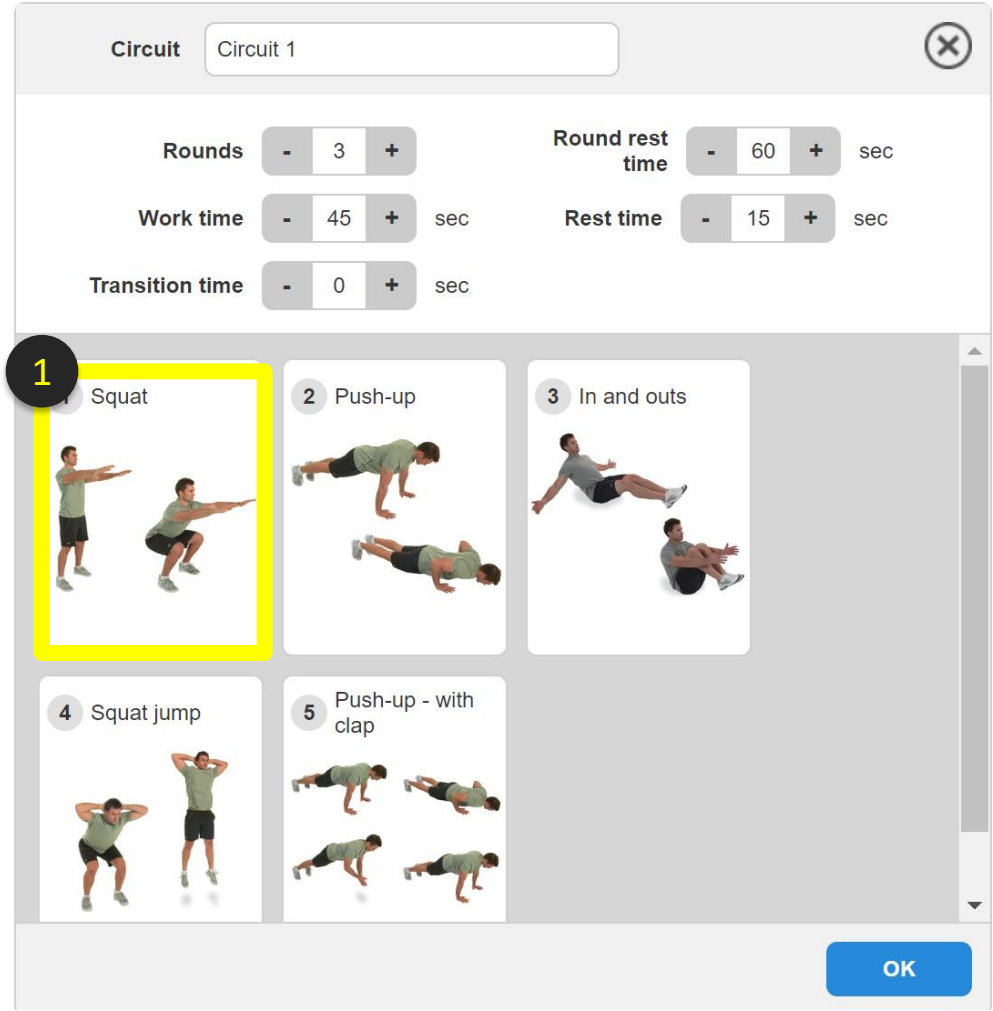

***NOTE:***

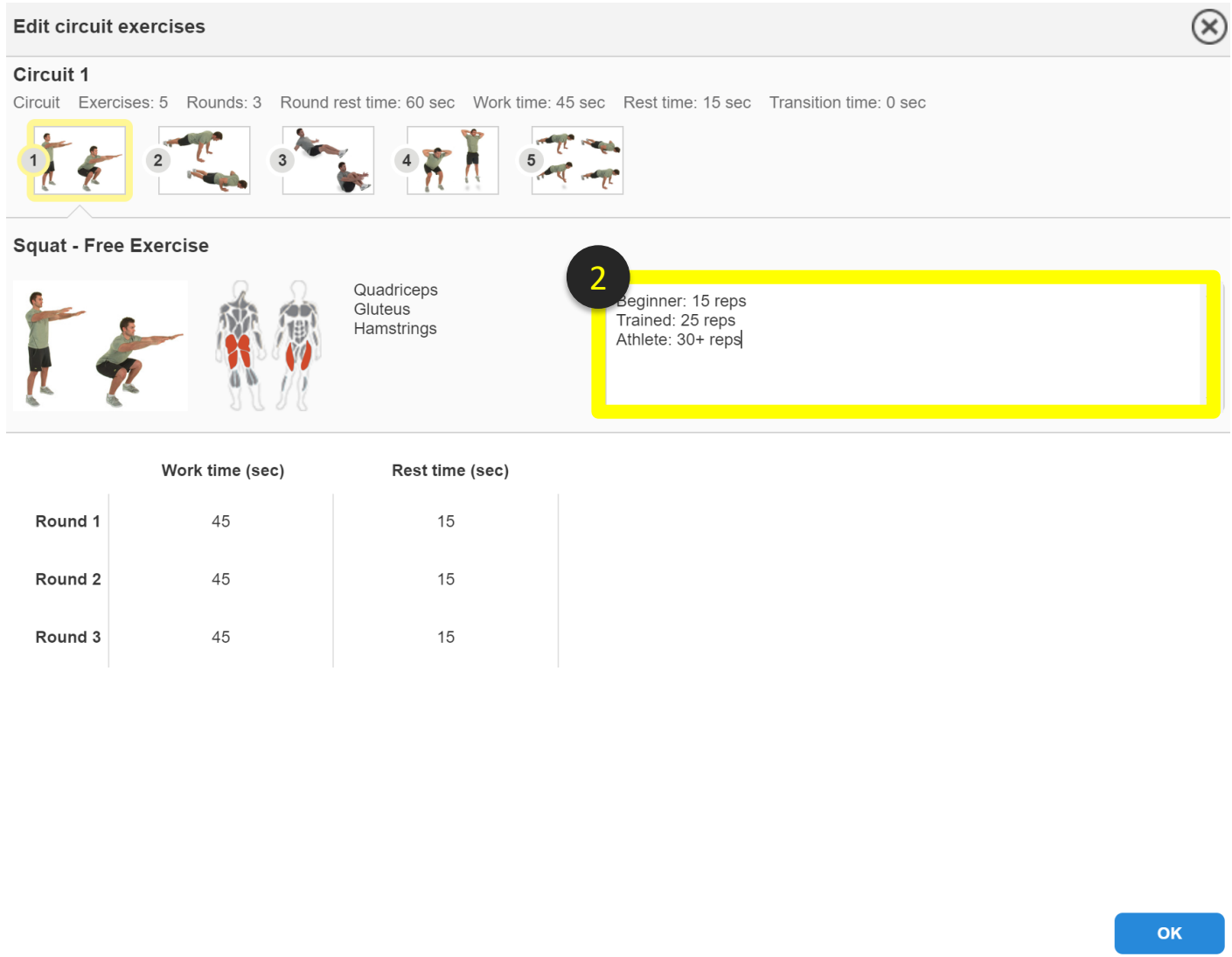
- *A class session can have **circuits** built with a sequence of exercises repeated several times: **rounds.***
- *The circuit finishes only when all the rounds are finished*
- *The **work and rest time in each circuit exercise are the same**, during all the rounds*
- *It is possible to insert a **rest between rounds "Round rest time"** and "**transition time"** at the end of the circuit*

# Search exercises > Add exercises by clicking or dragging

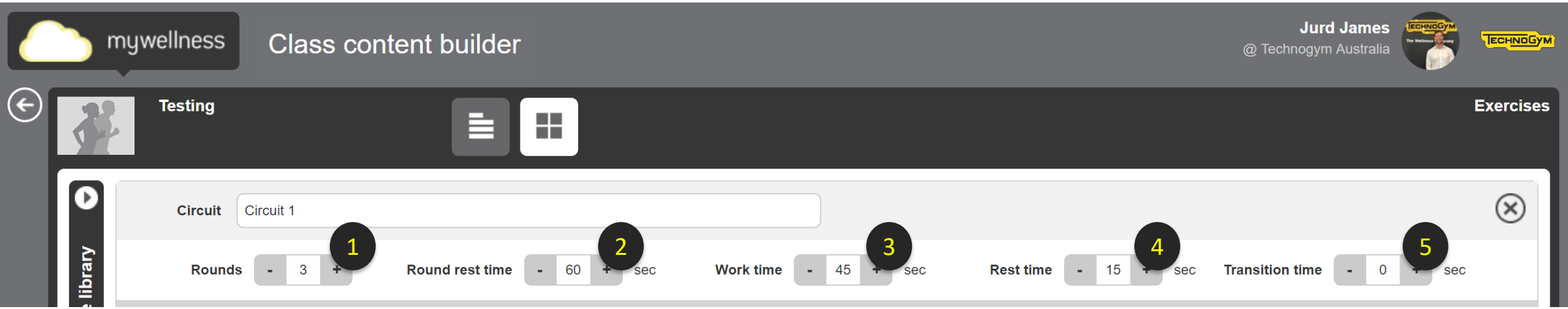


# Instructions: Select exercise > Add instructions to display during group session



# Circuit Timer: Key Elements




1 **Rounds**: Number of times to repeat all circuit exercises

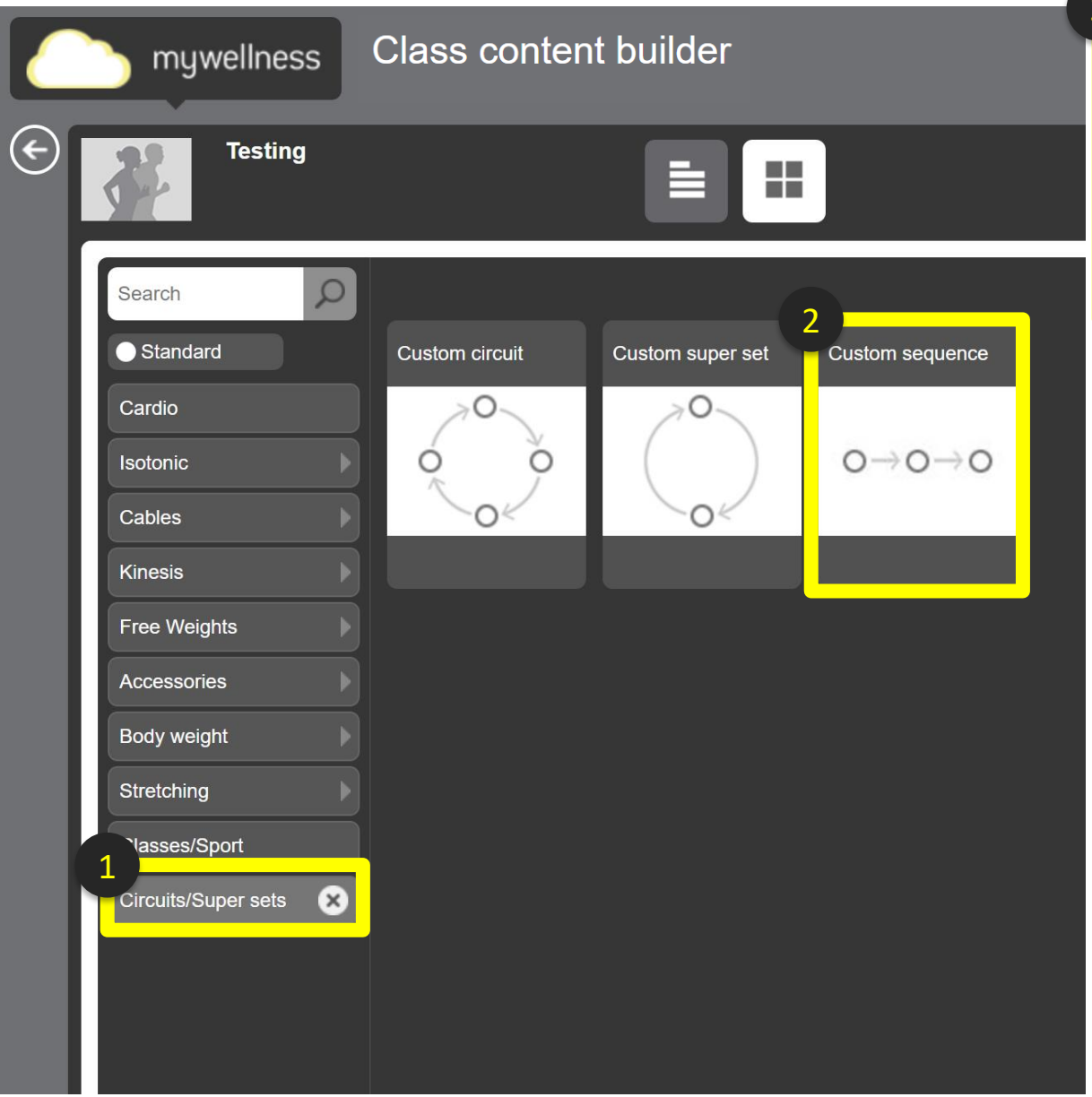
2 **Round rest time**: Recovery time between rounds. It can be set 0 seconds. During the round rest time TEAMBEATS shows on large screen the circuit exercises.

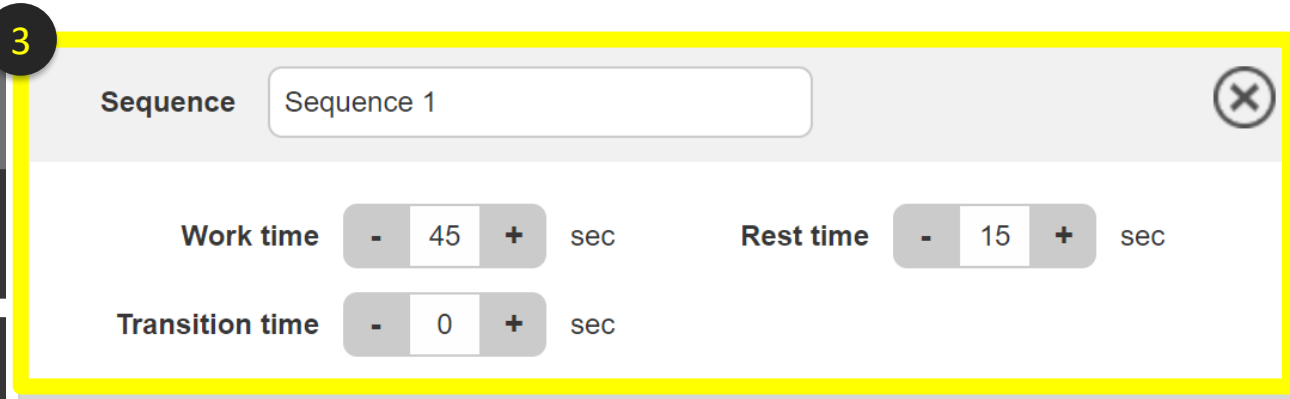
3 **Work time**: the number of seconds assigned to perform each exercise of the circuit.

4 **Rest time**: the number of seconds assigned to recovery before the next exercise, it is used to swap to the next exercise, it can be set 0 seconds. During the rest time TEAMBEATS shows circuit exercises on the screen.

5 **Transition time**: Rest time between the next phase, it can be set 0 seconds. During the transition time, TEAMBEATS will show exercises of the next phase.

# Sequence Design: Circuits/Super sets > Custom sequence > Input sequence details



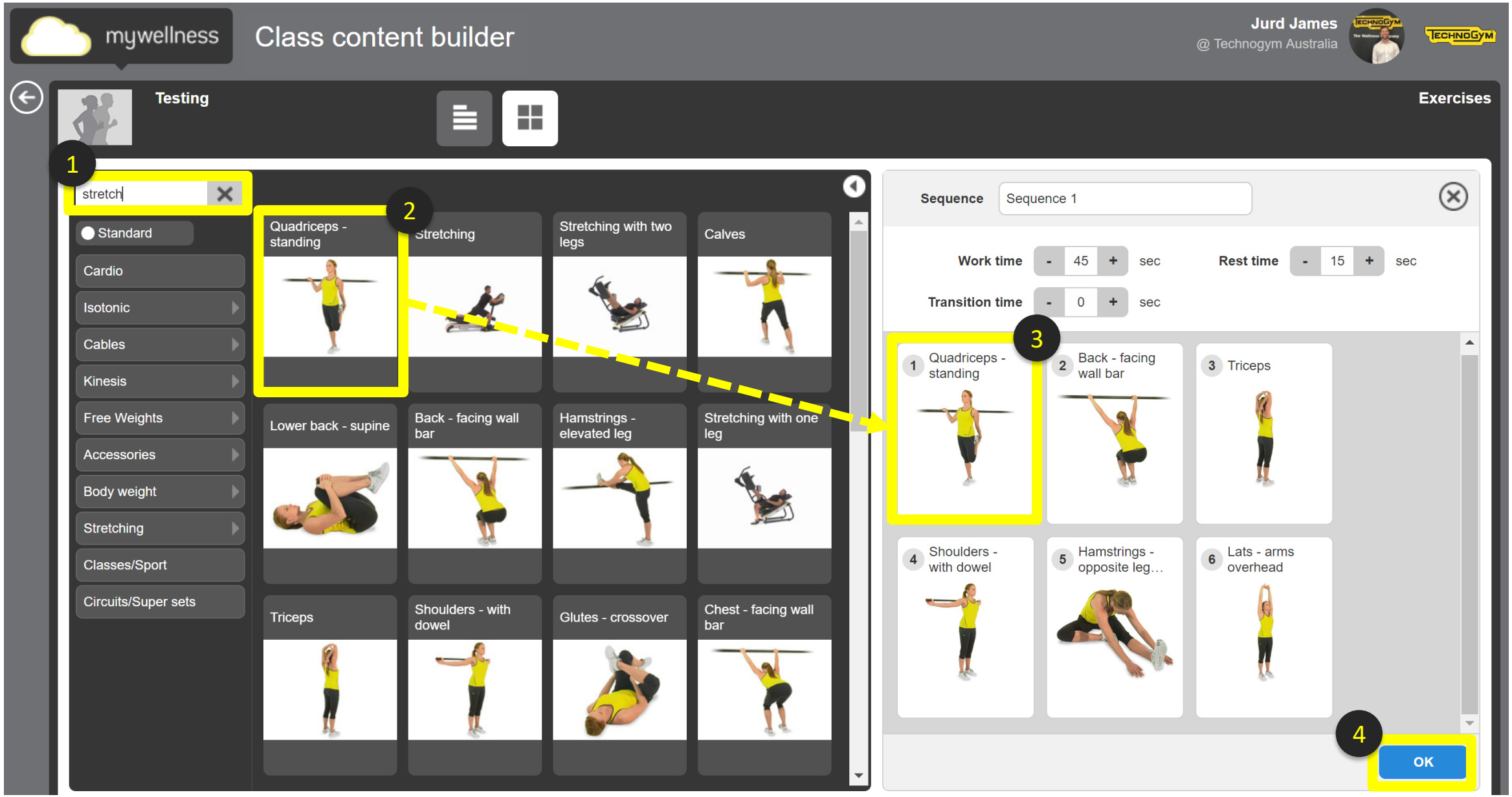




Add exercises to the sequence

***NOTE:***

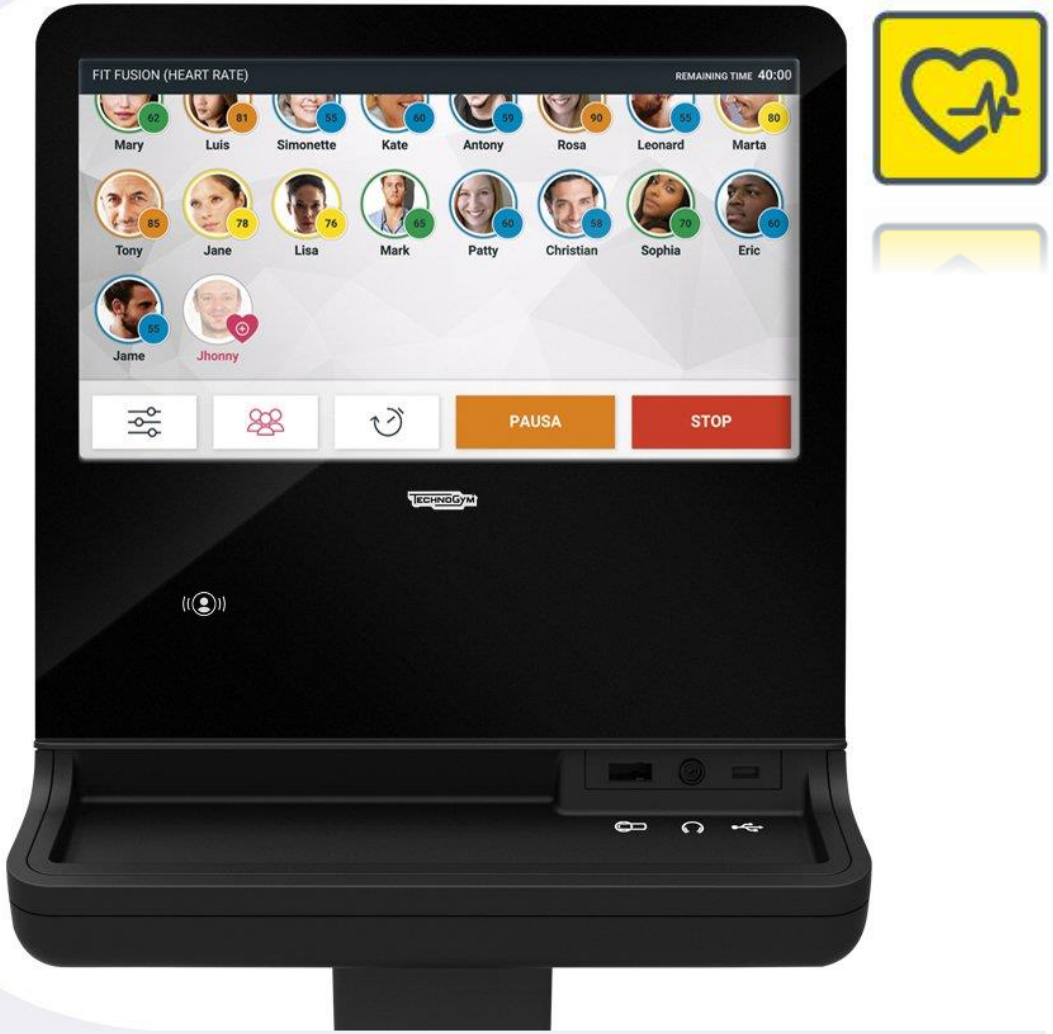
- *Typically the class starts with a **warm up phase** where the all participants perform the same sequence of exercises, this phase is called a **SEQUENCE**.*
- *The **work** and **rest time in each sequence exercise can be different.***
- *It is possible to insert transition time at the end of the sequence.*

# Search exercises > Add exercises by clicking or dragging



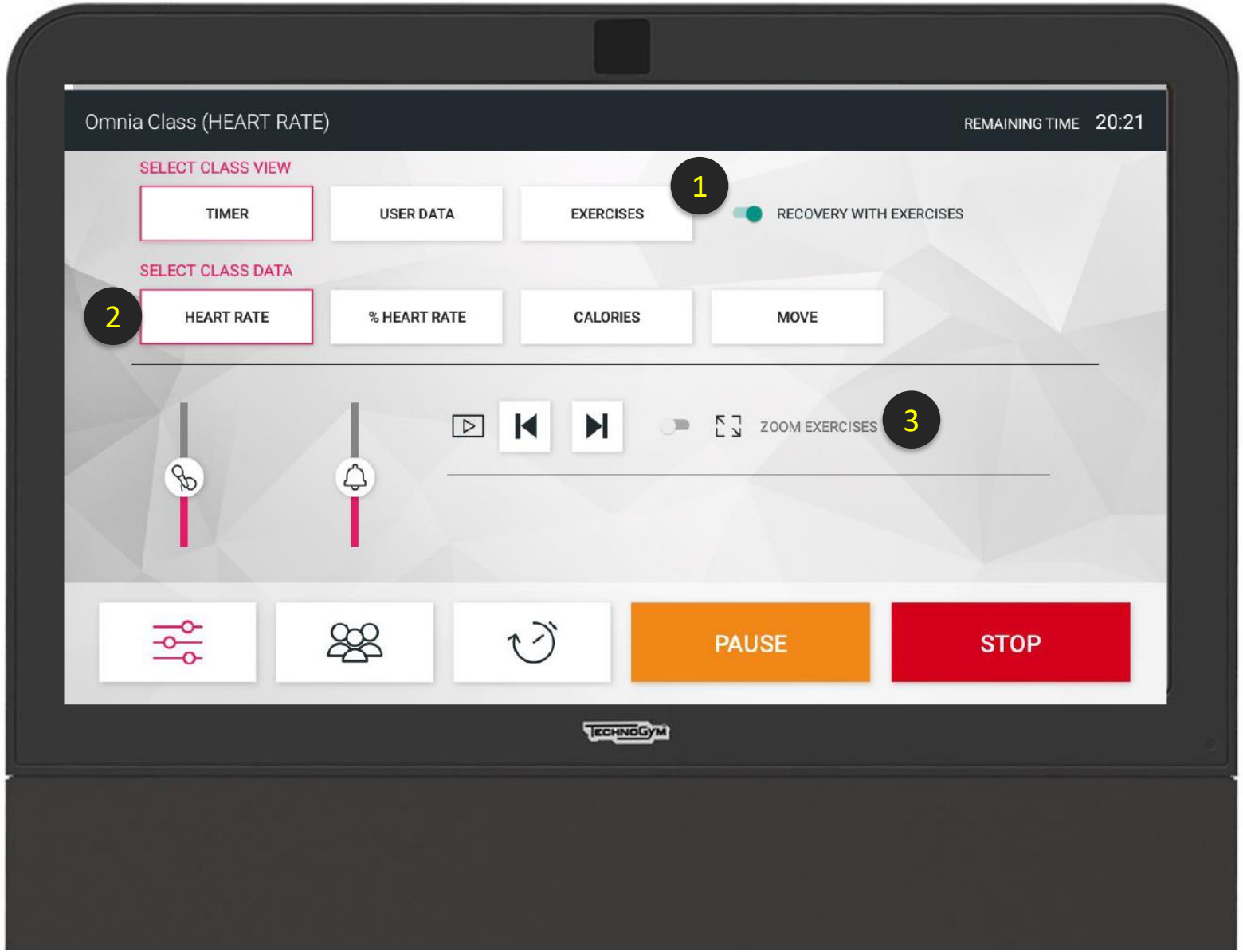
# TEAMBEATS 2.0 – Unity Self

# Setting Up Group Sessions in 7 Easy Steps




1. ***OPEN TEAMBEATS APP ON UNITY SELF***
2. ***SELECT CLASS SET UP***
3. ***LOG IN –*** *USER OR GUEST*
4. ***CLASS –*** *SELECT SCHEDULED OR CUSTOM*
5. ***TIMER –*** *SELECT PRE-SET GROUP CLASS WORKOUT OR CUSTOM*
6. ***MUSIC –*** *CONNECT VIA BLUETOOTH OR CABLE*
7. ***START SESSION***

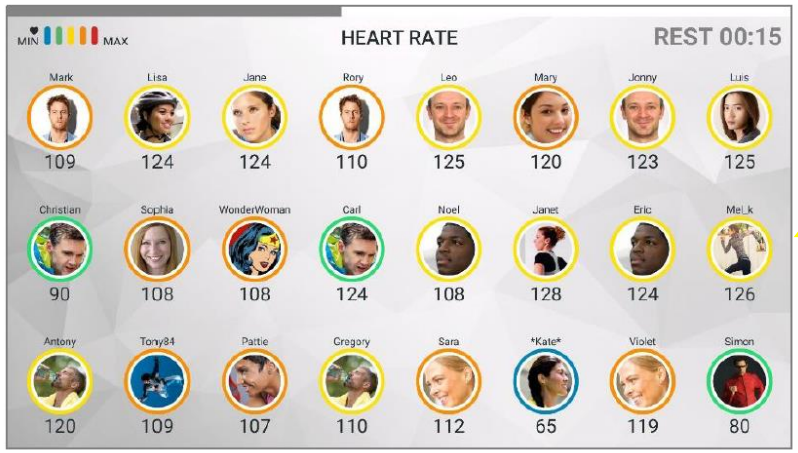
# Trainer Interface: Control Contents Being Played

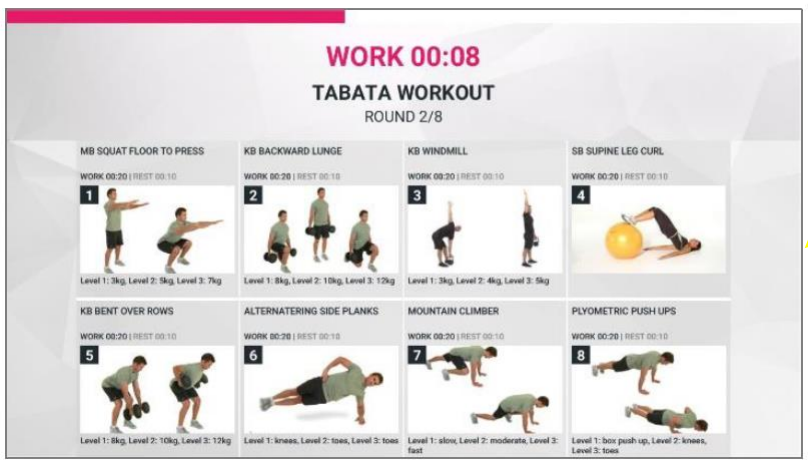



*Trainer has the ability to change class view at any time:*

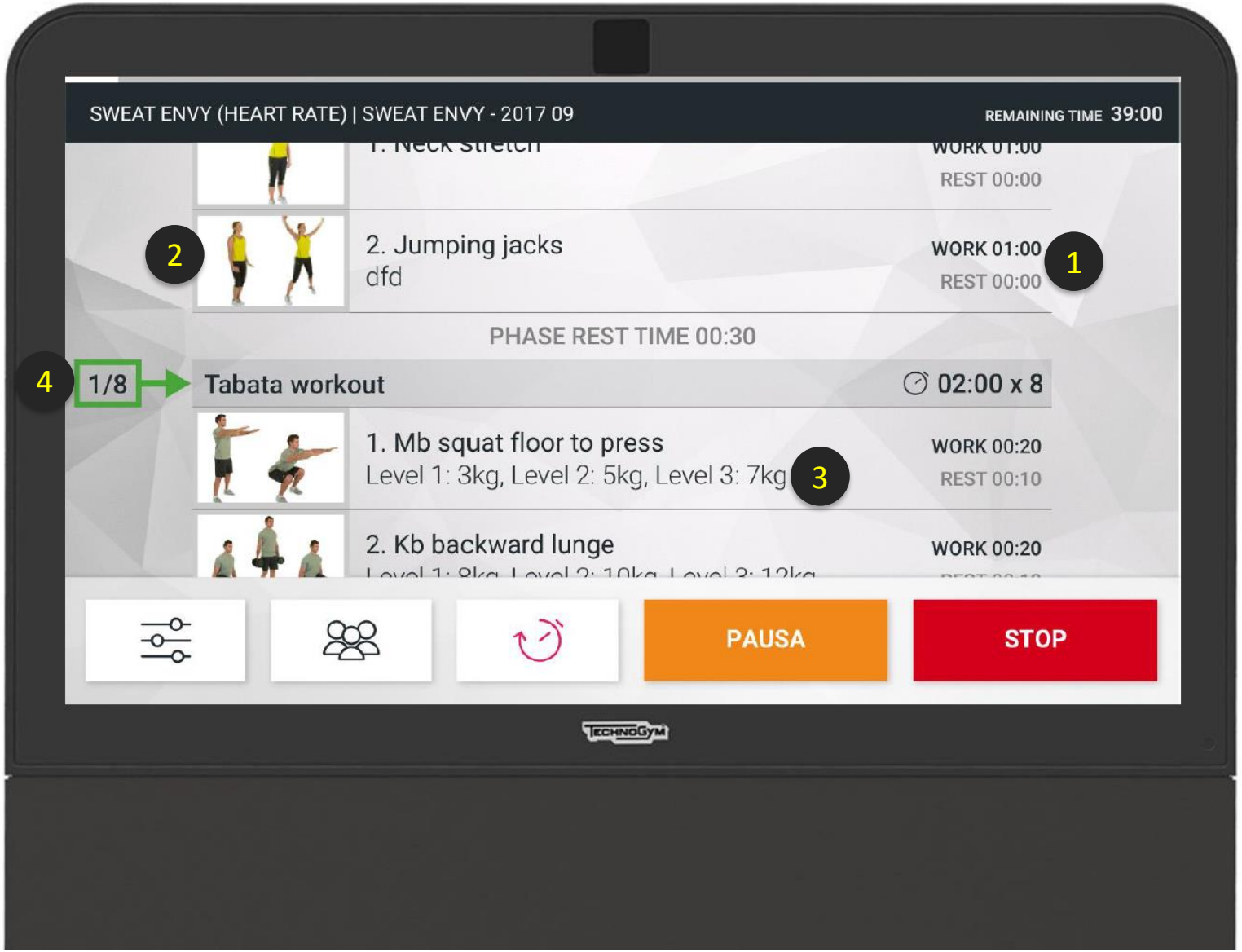
1. *Project exercise videos*
2. *Select user data*
3. *Play videos in zoom mode*

# Trainer Interface: Control Contents Being Played


# Trainer Interface: Workout Phases and Exercises




*Trainer can see phases and exercises that make up the class workout. This includes:*

1. *Duration*
2. *Images*
3. *User Instruction*
4. *Indication of where the class is*

# HR Monitoring

- Can members use their POLAR HRM on their phone as well to see their HR in real time? Via the Polar app
- A lot of feedback about Apple Watches and FitBit not compatible with the kiosk makes it difficult for clubs to sell a second device just for the purpose of having their heart rate on screen – suggestions to overcome this? Do we encourage these users to connect via the APP so that they can still collect MOVEs, participate in challenges etc Please see approved HR belts that are tested and compatible with Teambeats, also cheaper options will work (Bluetooth and ANT+) with Teambeats but not approved or tested by TG.
- Cost of belts is prohibitive – perhaps a comparison of what is on offer in the market to put this in perspective would assist here See above answer and HR belt slide
- What communications does a member receive regarding their results, is there a way to manage those communications in PMW? For example, a weekly email with their results. Live demo
- Explanation of why Heart Rates cannot be automatically displayed on the screen like Myzone GDPR which TG abide by, all members need to physically consent to their data being displayed in the facility every time.
- Some clubs had feedback about the cost of the heart rate monitors (ask Tahlia about installment plans for this product) Happy to discuss further
- In a members PMW profile it shows assigned devices, is this a device that has been assigned at the kiosk or via the Fernwood APP or both? Kiosk (kiosk assigned device will take priority and be displayed in the profile)

# Creating sessions in Pro

- The club haven't set up their pro.mywellness correctly (hiding/making available equipment) – this means they have to search through more exercises to find things Task for the club manager to do asap, needs to be done and only needs to be done once
- Trainer requested that exercise progressions be shown on the screen – what would be a solution for this? Will need to create your own exercises to incorporate this, use caption box to add text
- One of the barriers to creating content is that not all staff have the correct level of privilege – what staff group would they require? Class instructor, fitness director + director
- Is it possible to have 2 exercises per station – how would you set that up for Teambeats? Super Sets
- Sequence workouts for COVID suggestions
- How to create a session with first round 40sec, second round 30 sec, third round 20 sec as having to create separate rounds is time consuming Custom circuit – clone – change duration
- Is there a sled exercise in the library? Makes sure sled is enabled in equipment list