

VEVOX APP REPORT

Question & Reply

Although good evidence for 30 meter 6mwt, is this evidence floored in that the less turns the greater distance covered. I.e. would 40meters be better than 30 meters. Does 30 meter requirement limit OT entail venues and therefore have the potential to decrease access?

Its validated on either a 30 or 50m course. Any other length is not a validated test.

Could you discuss some of the comments in the chat? 6mwt vs ISWT CHF+ cardiac rehab?

I am unclear what comments you are referring too if you could add them here please

ISWT has significant limitation regarding patients stride length and any potential mobility issue, that no amount of rehab will show an improvement in this senario. So how do we overcome this issue when many places do not have a 30m space to use the 6MWT ? Thinking of this issue in light of accreditation requirements.

One of these tests needs to be your "gold standard" as a minimum. If you have a patient that is unable to complete one length of the ISWT then you would have to score them 0, then you could try an alternative test for your assessment (i.e STS etc). Performing a 6MWT on a different length is not a validated or suitable alternative. If the majority of your patients are assessed using an appropriate field walking test this would meet accreditation standards. Worth noting though that the ISWT is responsive to PR (and you would only assess responsiveness on a population level, not per individual) but an often overlooked test- the ESWT, where the 1st level is slower than the ISWT and is more sensitive to change. This is covered in depth on the Fundamentals to PR course. Hope that helps! If more q's re: accreditation specifically please email RCP and we can discuss directly.

Are there knowledge questionnaires for non COPD patients attending pul rehab?

The LINQ tool is for lung conditions, so this could be used

Does anyone have a PDF/ word copy of the LINQ to share?

I have found the questions online from a conference poster and made this into a pdf so not the official version but hopefully something everyone can use

Hi Rachel. Do you monitor SPO2 during the entire walking test? Or do you check SPO2 pre and post walking test

I just don't find the monitors are that great during movement. Here are comprehensive instructions from ATS. If it is worn throughout it should be secured to reduce motion artifacts. Personally I find it a distraction and measure before and after and at any time the patient might need to stop of his own accord.

<https://www.atsjournals.org/doi/10.1164/ajrccm.166.1.at1102#:~:text=%E2%80%9CThe%20object%20of%20this%20test,of%20breath%20or%20become%20exhausted.>

When it comes to oxygen desaturation is it not all relative to what Spo2 levels are pre test. I.E if spo2 is 95% pre test but drops to 85% during testing, would we not consider this significant desaturation?

A fall of 4% to below 90% is considered desaturation but yes absolutely a fall that big would be significant but 2lts may be sufficient even in that case to prevent desaturation. However it will depend on which test , you may see more desaturation with a maximal test compared to sub max.

is there many studies comparing pulsed oxygen therapy vs continuous?

Answered in session. At moderate levels of exercise they should be comparable assuming they are triggering the pulse with Nose breathing. Pulse may be more difficult at higher intensities / mouth breathing. They may require encouragement to nose breath.

When you repeat walk test with supplementary oxygen, what flow rate would you start with? Would you increase this if they showed no improvement in walking distance etc?

Answered in session. Usually start at 2 but if it's obvious 2lts is not enough ie: they desaturate very quickly you can stop that test and go to 4 Lts .

So in a PR class if a patient was desaturating to low 80s on aerobic exercise (and have declined oxygen assessment) would you allow them to continue unless they desat to below 80%?

Yes as answered in session. Benefits outweigh risks.

We carry O2 for emergency use. If we determine a patient would benefit from O2 during PR, who prescribes/determines that? We are not prescribers but can we use our clinical judgement even though it is not an emergency situation?

Try to get a local prescribing policy in place.

If we thought we needed to repeat the walking test on oxygen - practically would the patient need a referral to relevant oxygen teams to complete a test?

Rehab may change response to oxygen,(may desaturate more due to reduced dyspnoea) so I think if you have a service do refer them but don't make them wait for that assessment before getting rehab. Having the thorough oxygen assessment may even be more appropriate after rehab. Get them into rehab and do the best you can with titrating oxygen and simultaneously make the referral to oxygen team.

For those with ILD desaturating below 80, would you enrol them in PR if they not keen for AOT?

Answered in session but yes. Always remember the benefits of rehab are huge and nearly always outweigh the risks

Would you suggest aligning the walk tests as we use ISWT for PR but the O2 service use the 6 minute walk test. Difficult to assess 'benefit' in this case?

Ideally yes. ISWT is a test of maximum exercise capacity whilst the 6MWT is a measure of functional exercise performance. Some people might desat on ISWT but retain sat >90% during the 6MWT and during ADLs.

What will be more preferred Spo2 through ear probe or finger probe?Do they have some difference?

Research shows that finger probes on the finger are most accurate when compared to ABGs - finger probe on the ear was the least accurate.

Is there any evidence that the ISWT is a sufficient test for assessing oxygen needs/demand? We no longer use the 6MWT so this would require another appt in the oxygen clinic for those who desaturate

Yes can use ISWT but dont use the 2 tests interchangeably.

What will be more reliable for measuring Spo2 ear or peripheral pulse oximetry.As the values are different all the time.

Research has shown finger pulse ox was most closely associated with ABG - finger probe on ear was the least accurate.

Do people tend to ask their patients to do continuous work in the bike or interval training?

If patient is unable to exercise continuously for the required time (ie. 20-30 min), then intermittent aerobic exercise should be applied to allow the patient to achieve the required total duration of aerobic training

So in a PR class if a patient was desaturating to low 80s on aerobic exercise (and have declined oxygen assessment) would you allow them to continue unless they desat to below 80% yes but educating on breathing techniques and on Borg. If patients are using BORG properly they tend to be fairly sensible and stop naturally. Remember risks of desaturation are minimal compared to benefits of exercise.

I think Rachel said in her presentation that she would be happy for patients to continue to exercise at sats >80%. As you suggest patients are often the best judge of their own limitations.

In your study Ioannis when you refer to leg fatigue are you using BORG RPE? Is this your preferred way of measuring leg fatigue? Have you ever used BORG CR-10?

Yes, using Borg scale to gauge leg discomfort. During interval exercise we aim for a leg discomfort Borg score of 5-6 and breathlessness up to 4.

How would you assess oxygen desaturation for an intermittent PR programme when the ISWT is a continuous test. Wouldn't the ISWT cause AOT over prescription?

You perform the ISWT to assess peak walking speed and level of desaturation. Then you prescribe intermittent walking at 85% of peak walking pace alternating 1 min walk with 1 min rest. During walking there might be a mild desaturation, but SpO2 will recover during rest. .

Are the outcomes of a PR programme using intermittent exercise comparable to a PR programme using continuous exercise?

The outcomes are comparable when the study design matches the total work load between the continuous and interval exercise regimes. However, there is a tendency to see superior muscle fibre phenotypic changes with interval exercise that translate to significant greater improvements in peak work rate.

Any evidence on interval vs continuous exercise for people with exercise induced asthma?

Ioannis is covering this now in his talk.

Ioannis, at what heart rate percentage would you stop exercise for our respiratory patients? Would you allow them to go past their 75% of max heart rate, even if they are still maintaining the recommended Borg score even with intermittent exercise? And Rachel, is there any evidence that having prolonged desaturation (especially in ILD patients) has an effect on heart rate/cardiovascular function i.e. it increases it significantly?

With interval exercise heart rate does not increase much because of the short exercise period and the recovery phase which brings heart rate down. So we use symptoms to gauge intensity

For intermittent exercise on bike how do you work out the prescribed bike speed?

Cycling - pedal rate is maintained at a comfortable level: 40-50 revolutions per minute. The intensity is determined by the resistance you apply to the bike make is progressively more difficult to pedal at a given pedalling rate

hello, please how do you determine maximal intensity during exercise?
also, do the rest periods during intermittent exercise mean absolute rest or does it mean low intensity movements for eg marching on the spot?

Maximal exercise is determined by a preliminary incremental test on the cycle ergometer, treadmill or flat surface (ISWT). We can use the same apparatus that you use during training and progressively increase the load to the limit of tolerance. On the bike you increase the resistance, on the treadmill you apply progressive inclination. During the ISWT, the walking speed is increased every minute

Is there any evidence on the long-term outcomes following interval training vs continuous training in PR?

This is a very good point. Typically the primary effects of both modalities are sustained for comparable periods post discharge.

If you were doing interval training on a treadmill or bike, what times would you be looking at? Bearing in mind for accreditation the criteria states patients should do min 20 minutes aerobic exercise.

With intermittent cycling 1 min on - 1 min off, patients can easily exercise for 20-30 min without intense symptoms.

How would you prescribe interval training, is there guidance on minimal/maximal time?

You need first to assess peak cycling capacity or peak walking speed during the ISWT. Then you calculate a fraction of peak work rate or walking pace

We currently work on a 2min on 2min off method would you suggest 1min on off to be superior ?

This is fine for as long as patients can afford working for 2 min. If patient struggles with the duration of the work phase, then decrease the duration of the active phase and keep the rest period for as long as necessary for the patient to recover and start over

Do you use RPM to guide bike speed/intensity?

No, we keep pedal rate constant at comfortable and acceptable rates, about 40-50 rpm. We manipulate the intensity by increasing the resistance on the bike or add loads to the bike if you use an old type

Does intermittent exercise have to be strict interval style training with the same activity or can intermittent also mean circuit type training - so different cardiovascular exercises for each interval e.g. marching on spot/half star jacks etc?

You can implement intermittent exercise across different station of circuit training. So the patient moves from station to station and at each station he/she performs the task intermittently instead of continuously

for patients with Hypertension, do you need to use their target heart rate to determine the intensity of their exercise or is there another parameter to measure the level of exercise carried out by the participants?

In the PR setting we use the Borg scale to gauge the intensity of exercise. Intermittent exercise does not increase HR that much in people with pulmonary hypertension because the duration of loading is very brief and then they have few seconds to recover. So aim for leg discomfort at 5-6 as the target of exercise intensity.

Not sure. We sometimes have quite active people MRC 3. We try 4-5 mins of exercise followed by 1-2 mins of rest reaching Borg for breathlessness upto 5 .Do you consider this also as a type of high intensity intermittent training or not? or not?

I think a similar question has been answered by Ioannis. Yes - patients who are less impaired will be able to tolerate longer bouts of effort

Is there any link between location of pain and risk of falls? Are we mainly thinking about lower limb pain?

Good question. People with COPD have more pain in their thoracic region than a chronic pain population without COPD. Ofcourse pain in lower-limbs - hips, knees - are also common as with healthy older adults. Pain in the thoracic region can cause stiffness, meaning central balance strategies are inhibited, increasing falls risk.

With all the ongoing accreditation requirements/suggestions are services finding they have enough time within assessments/clinics to do proper resistance training, cardiovascular exercise with walking speeds as well as a thorough balance assessment!

This is a point/issue that is often raised. Not everyone will require balance training, screening for those at risk of falls is important and quick to do (less than 1min). Balance training can be incorporated into other activities e.g. strengthening. Most important is to practise getting up off the floor, walking backwards and make sure people do get a bit wobbly (e.g. gripping onto pbars will not train balance).

I use the TUG and Turn 180 in my pre-assessment. Is the the Turn180 okay to use in your opinion - I think NICE guidelines recommend these two?

To my knowledge it has not been validated in people with CLD but is recommended for older adults. Turning is absolutely a problem for people with COPD who describe falling when, for example turning to put a key in the door to lock it.

It is such important work but with ongoing time pressures on PR services we would often be more inclined to refer these higher risk patients into falls prevention services ?

This is an option - although research and evaluations have shown the population who are least likely to attend falls prevention programmes are....those with COPD. Falls is a major barrier to physical activity, something PR seeks to improve.

Any work on postural stability groups and PR groups?

I'm not sure what this means, would you mind clarifying the questions please?

I work in a hospital setting, how can I assess falls risk at home , do I use a questionnaire or is a home visit necessary? If a questionnaire is all I need , which one do you recommend?

There are home screening questionnaires, this is an example of one to give an idea of things to consider and ask about chrome-extension://efaidnbnmnnibpcjpcglcfindmkaj/https://www.newcastle.edu.au/__data/assets/pdf_file/0007/137185/HOMEFAST-Home-Falls-Accidents-Screening-Tool.pdf. I think it is definitely worth asking about these sorts of things and making a clinical judgement about whether a home visit is necessary and what the best service is to do that.

We are currently asked to complete a FRAT with all patients who report a fall (witnessed and unwitnessed) but I don't find it that useful, would you suggest that something more objective would be more useful for patients who report falls. Also our falls service have stringent criteria so often reject our referrals. Also if patients haven't actually fallen but have had near misses, would you recommend falls assessment?

I expect that they are using the FRAT to screen/triage and will use this to see the most severe cases of fallers because like all services they are stretched. We've met people who've fallen and fractured limbs but wouldn't necessarily meet the criteria of falls services because they've only fallen once and are mobile without aids. Those who aren't deemed to be the most severe cases will be often be referred to community based exercise which doesn't include specific balance training and people with COPD don't tend to do as well with attendance and outcomes

(<https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-022-13832-3>). I would say if someone has reported a fall, then they are at risk of falling again and I would definitely screen and assess their balance. I would also screen and assess people who haven't fallen but report near misses as this is a great opportunity to prevent that first fall that increases future risk and creates a fear of falling.

https://www.csp.org.uk/system/files/get_up_and_go_0.pdf

This is the printable hand out from the CSP, there's a video and other languages on the main page too

<https://www.csp.org.uk/publications/get-go-guide-staying-steady-english-version>

Regarding the falls screening (I ran out of characters!) we've also used the FROPCOM in studies in the past. It can be self administered and checked so that might be useful.

Please can we spend a few minutes discussing strength assessment and then how to prescribe in particular when using a dynamometer for lower limb .. it is stated as a gold standard to use a device for strength ax but how would you advise prescribing for high levels of quads ? Especially in a community setting ?

Ax and prescription of resistance training is covered on the BTS fundamentals of PR course. You might find these recommendations useful. <https://www.journalpulmonology.org/en-prescribing-adjusting-exercise-training-in-articulo-S253104372200215X>

How might we calculate peak work rate for aerobic exercises such as marching or half star jacks

You can not calculate work rate in these circumstances

Using an exercise bike alone how do you determine mikes 100% to be able to calculate 85%. Do you take into account all variables of time, resistance and speed/distance when looking at mikes 100% capacity?

To determine 100% of peak capacity you need to perform an incremental cycle test by increasing the resistance every minute until Mikes reaches his exercise tolerance. You maintain pedalling frequency constant (40-50 revolutions per minute) and you only increase the load.

is unloaded cycle equivalent to active recovery?

Yes, this is active recovery where very little energy is expended but cardiac output and minute ventilation are maintained at a level that can support a subsequent increase in exercise intensity when transitioning to the active phase again

If you do an ISWT and calculate 85% VO₂ peak and the calculated estimated walk speed is for example 3.4km/hr. For the ESWT would you round up or down, or just use the nearest. Level 6 ESWT is 3.27km/hr and level 7 is 3.6km/hr. Which level do you choose?

At the beginning of the rehabilitation programme I would round down so to start from a low pace. Once I ensure that the patient can walk comfortably for 1 min and rest for another minute, I would aim to increase the total duration of walking exercises to 20 min. Then I will add one more shuttle (faster walking pace) within the 1 min of walking so to progressive increase the difficulty of exercise.

Not sure. We sometimes have quite active people MRC 3. We try 4-5 mins of exercise followed by 1-2 mins of rest reaching Borg for breathlessness upto 5. Do you consider this also as a type of high intensity intermittent training or not?

Yes this is intermittent exercise with longer working periods. Fitter patients can sustain prolonged exercise periods before needing a break. In cardiac rehabilitation the most efficient modality is 4 min work followed by 4 min rest

A few points regarding strength testing and ISWTv6MWT have been replied as covered more in the fundamentals course .. the problem is many of us are very experienced in PR but finding new challenges associated with accreditation requirements and maybe this could be addressed some how through CSP /BTS ?

The BTS fundamentals course has been signposted as we don't have time to cover all topics on this course and we don't want to duplicate content. The fundamentals is open to all regardless of years of experience and we have many people report they enjoy it despite being in PR a long time. The BTS quality statement should cover strength assessment and the PRSAS website has some FAQs related to strength assessment specifically. Is there anything specific we can answer today?