



Fitness Frontline



www.20mrun.com

The universal test of aerobic fitness and metabolic health

Incorporating the 20m
run schools' class
challenge

Digital - self-paced learning module -



DEDICATION

The 20m run Aerobic Fitness Test is dedicated to Kerry O'Brien, former World Record holder for the 3,000m steeple chase (8:21.98) and the Indoor 2 miles (8:19.2). Kerry knew how to train hard. He trained often and trained for many years.

Kerry and I grew up on Spencer Gulf in South Australia, Kerry in Port Augusta and myself 45 miles away in Whyalla. In the early 70's I used to run with him some mornings, his slow run, my fast. Kerry ended up a World Record holder. I ended up at the top of those who were hopeless and the bottom of those who were any good.

George Bernard Shaw said; '*Those who can, do, those who can't, teach*' - which is why I became a PhysEd teacher!



Kerry O'Brien, World record holder:
3,000m steeple chase: 8:21.98 - 1970
Indoor 2 miles: 8:19.6 - 1971

John Miller

20m Run Test of Aerobic Fitness

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The 20m run test of aerobic fitness and metabolic health is the simplest, easiest to administer, reliable, valid and discriminating field test of aerobic fitness for children, adolescents, 'regular folks', elite force personnel and athletes.

Based loosely on the well-known 'beep test' of aerobic fitness, all that participants have to do is to see how many times they can walk, shuffle, jog or run between two lines 20m apart in 5 minutes.

That which we persist in doing becomes easier,
not that the nature of the task has changed,
but our ability to do has increased.

Emerson



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Exercise is a journey
not a destination. It
must be continued
for the rest of your
life.

We do not stop
exercising because
we grow old -- we
grow old because
we stop exercising.

Kenneth Cooper



INTRODUCTION

The **20m Run** test of aerobic fitness is a universal test of aerobic fitness. It's based loosely on the widely recognized 'beep test' – but it's better suited for regular folks, school students as well as elite force personnel and athletes.

For those unacquainted with the 'beep test', the test involves running to a cadence of beeps over a 20m course. The aim is to reach the end of each lap before the next beep. Five minutes of 'beep test' amounts to 41 laps.

After running thousands of people through the 'beep test', I came to the conclusion that for 'regular folks' reaching the end of level five (i.e., completing 5 minutes) was an indication of a good level of aerobic fitness for men and a very good indication for women. You need to train to reach these levels.

But the beep test is not a good test for 'regular folks many of whom cannot last 2 minutes. The spread of scores is not discriminating enough to make it a test suitable for a wide spectrum of people.

Because they weren't walking, shuffling or jogging for long enough, the 'beep test' didn't give participants in poor physical condition a good idea of just how far they had let themselves go.

Plus, the 'beep test' involves the rigmarole of having to lug around a CD player and purchase the CD with the beeps on it. It's not a test that is going to encourage doctors, fitness practitioners, dieticians and counsellors to use it as a useful field test to help determine the status of a person's metabolic health.

The number of beeps per lap increases to the point where people can't reach the end line before the next beep.

I rounded the number of laps off and found that for men, 40 laps was a good score and for women 37 laps. People who can achieve those standards are in good aerobic fitness condition. They're in good metabolic health.

It's also likely that their mental health and wellbeing is good. People who achieve this standard are people who have either chosen their parents wisely or, more likely, have a good aerobic fitness training program.

For entrants into elite force occupations, like police, armed forces and fire brigades, I'd say that 50 laps for men and 48 laps for women would be about the right standard.

Most adults are scratching to achieve 30 laps in five minutes. If you walk very quickly you can get 30 laps. Those who reach less than 25 laps are not in good physical condition.

The best results I've seen in corporate organisations is 60 laps for a man and 55 laps for a woman. The smallest number of laps was 9, by people who were semi-disabled – and who took the assignment seriously.

20% are lucky to achieve 20 laps. These are people suffering from metabolic dysfunction, with a low level of aerobic fitness being accompanied by the usual symptoms of obesity, high blood pressure, high blood sugar, tiredness ...

Those people who fail to achieve 15 laps are people who are seriously challenged, metabolically (and/or musculo-skeletally).

This broad spectrum of scores is what makes the 5 minute 20m run a good field test – for allcomers.

BEEP TEST SCORING SYSTEM

Level	Laps per minute	Total laps
1	7	7
2	8	15
3	8	23
4	9	32
5	9	41



1. AEROBIC FITNESS



Aerobic fitness is the body's mechanism for

- getting oxygen into your lungs, transferring into your blood stream, pumping it around your body and distributing to every cell
- removing the waste products of metabolism out of the cells of your body, into the blood stream and out of your body.

It's the foundation of healthy metabolic function. In fact, along with the fuel you put into your body it is the key driver of metabolic health.

Let your aerobic fitness run down and you can be pretty certain that sooner or later you'll start experiencing some of the symptoms of metabolic dysfunction.

You stack on weight, your blood pressure, glucose and cholesterol levels go up. You feel tired and depressed. In short, you feel terrible.

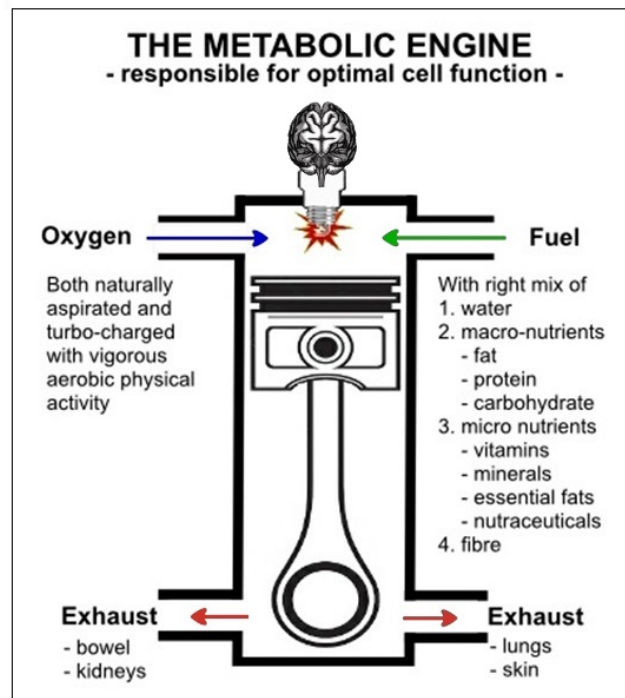
Your level of aerobic fitness is the symptom of the efficient functionality of all the major body systems which are designed to support healthy cellular function, including the lungs, the blood, the heart and the systems involved in elimination.

Aerobic fitness exercise is the body's 'turbo-charging' mechanism designed to make sure that all the trillions of cells in your body are getting the oxygen they need to work efficiently.

It is the mechanism for boosting the various elimination systems, including the lymphatic system, the blood, liver, kidneys, bowel, skin and lungs.

The better the cells work the healthier you are. It trivializes the concept of aerobic fitness to ascribe as its main benefit your ability to do more vigorous, muscular, physical activity for longer periods of time.

Sure, that is what happens, but it is a byproduct, a symptom of the fact that a range of body systems are working more efficiently, not just your muscles.





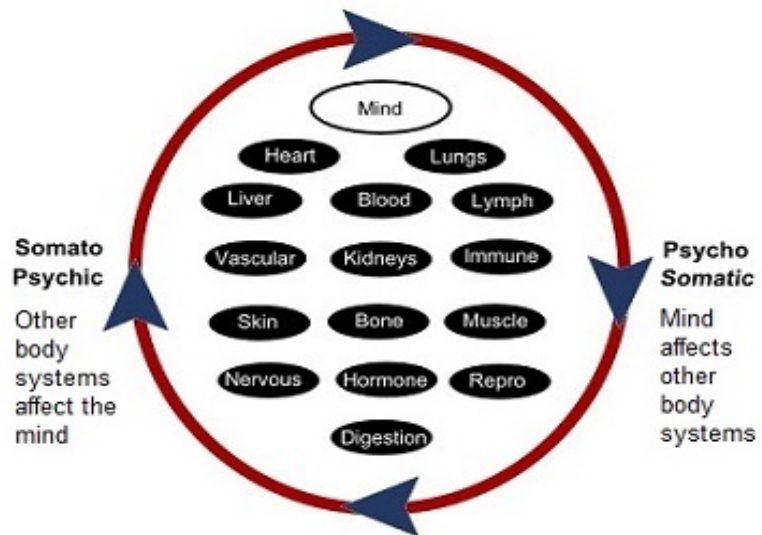
We all know that the mind is connected to the body; e.g., when we get anxious, we may exhibit physical symptoms (headaches, sore shoulders, high blood pressure, irritable bowel ...). This is known as the **psychosomatic effect**.

What is less well known is the **somato-psycho effect**, where once the body is galvanized into action through an aerobic exercise program, there is an impact on the mind – you feel better.

Anyway, to cut a long story short, test your aerobic fitness on a regular basis and keep track of your performance.

To improve your test score, you'll need a regular and systematic aerobic fitness training program

THE INTERCONNECTED SOMATIC ECOSYSTEM



THE AEROBIC STANDARD

Of all the measures of how well your body is working, your level of aerobic fitness stands head and shoulders above the rest, much more so than blood pressure and blood glucose. You can still have normal blood pressure and glucose levels long after the efficiency of the major metabolic health systems has decreased.

In this respect, a decline in aerobic fitness is the first of the warning signs that body system function is being compromised. An elevation in blood pressure may not occur for years and then the systems may be so far 'gone' that the situation is irretrievable. You've got permanent body system dysfunction and you're destined to be on one or more pharmaceuticals for the rest of your life.

Having said all that, it's usually the case that when we talk about aerobic fitness, we start talking about our ability to do things that require physical effort – whether it's walking to the end of the street, walking up a couple of flights of stairs, going on a hike, playing a game of tennis...

Wouldn't it be awful to restrict your choices in life because you hadn't bothered to keep yourself fit enough to do them?

As we get fitter we can do more and we can do more for longer.

Fitness is not about being better than someone else ... it's about being better than you used to be.



2. THE BIG ASK

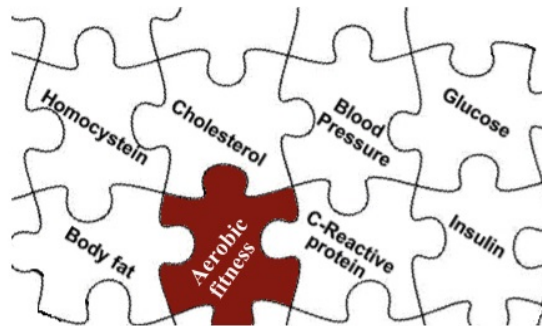
It's big ask expecting to stay healthy without keeping yourself fit. It's another big ask expecting to stay healthy by having someone do something to you. Sooner or later, you have to do something to yourself. That something is vigorous aerobic activity. As you become more vigorously physically active on a regular and systematic basis your health improves - i.e., the major systems of your body improve their function.

A comprehensive health and fitness checkup

I strongly recommend that the 20m Run test be included in the battery of assessments that go with a comprehensive metabolic health check.

Without it, a health assessment is seriously compromised; a most fundamental part of the health jigsaw puzzle is missing.

When you can get to 50 laps (men) or 47 laps (women) report back and I'll give you your next assignment! You're exceptionally fit and healthy.



If you're a man and can reach 40 laps and a woman who can get the 37 laps, when next I see you, I'll give you a pat on the head and a bag of lollies!



THE USUAL WARNING

The 20m Run test is not for people who are at grave risk of cardiac dysfunction.

If you're in dreadful shape you may wish to have yourself checked out by your physician before doing this test. The physician will be able to hook you up to an electro-cardiac machine which will detect any life-threatening cardiac abnormalities.

When doing the test, go at your own pace. That's what makes it a safe test. Over the years I've measured some pretty unfit people, three of whom just fell short of doing 10 laps in five minutes.

If you can only walk, you'll probably get just over 20 laps. To get over 30 laps you need to walk very quickly.

At 30 laps you're starting to approach what could be called 'reasonable shape'. Over 40 laps for men and 37 for women and I'd say you were in good shape.

At the other extreme I've seen one man get to 60 laps and ne women to 55 laps.

So, pace yourself, don't overdo it. If you have to stop, **STOP!** If you're just running out of puff, slow down, walk or shuffle and then pick up the pace later on. Alternatively, you could walk one lap and jog one lap.

On the other hand, if **you're completely exhausted** and think you may do yourself a serious metabolic injury **STOP** and don't resume the activity.



3. WHAT'S THE BEST AEROBIC EXERCISE

There is no one exercise that's best.

There are many aerobic activities for you to choose from and you'll gravitate to the ones you enjoy most - or get the most benefit from.

Some you can do on your own or with a partner, some you can do in groups.

All you have to remember is that the stimulus to improvement of aerobic capacity is how often you do it, the time you do it for and your heart rate.

As I explain in the Aerabyte section, for a 40-year-old person a heart rate of 120 is good, 130 better and 140 best.



If you're doing a weightlifting program in the gym, providing you move quickly between machines, you'll be able to keep yourself in at least Fitbit's fat burning zone (heart rate approximately over 60% of your age-related maximum heart rate).

If you need inspiration and motivation to start exercising, sit in the garden for ten minutes and watch what the bees and ants do.



4. THE FITBIT AEROBIC FITNESS TRAINING PROGRAM

Trying to improve your aerobic fitness without an exercise prescription that includes frequency, duration and intensity is like taking a pill that comes without an active dosage and without instructions on how often to take it.

Without a definition of intensity, based on time and heart rate, the exercise guidelines recommended by the American College of Sports Medicine and the Centre for Disease Control are about as useful as an ashtray on a motor bike: *'All healthy adults aged 18–65 yr should participate in moderate intensity aerobic physical activity for a minimum of 30 min on five days per week, or vigorous intensity aerobic activity for a minimum of 20 min on three days per week.'*

This sort of prescribing routine is one of the root causes of the inability of the medical industry to restore people with general metabolic dysfunction to good health. Doctors can't complain that they're too busy when their diagnostic and prescribing practices guarantee that their customers will soon be back on the surgery doorstep.

A good aerobic fitness program requires a dosage involving **frequency** (times a week), **duration** (length of each session) and **intensity of effort** (based on heart rate). This rule forms the basis of the **Fitbit Aerobic Fitness Zone System**.

If you're serious about becoming aerobically fitter, merely recording time, steps or distance is pointless unless effort is also taken into account.

$$\text{Zone Points} = \text{Time (in minutes)} \times \text{Intensity of effort (on a scale where points per minute are matched against heart rate)}$$



Fitbit calculates the number of zone points you've accumulated using a formula based the actual time (T) in minutes, maximum heart rate, resting heart rate and heart rate reserve. Below it a rough guide, based on percentage of maximum heart rate. It's a close estimation of how Fitbit calculates the Fitbit zones.

Fitbit zone points per minute- based on % of age-related maximum heart rate.										
Effort	Light		Moderate		Vigorous					
Pts/min	0		1		2					
% MHR	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Age										
20	105	114	124	133	143	152	162	171	190	200
25	102	111	120	130	139	148	157	167	185	195
30	99	108	120	130	140	150	160	170	180	190
35	96	105	114	123	131	140	149	158	175	185
40	99	108	117	126	135	144	153	162	180	180
45	94	103	111	120	128	137	145	154	171	175
50	89	97	105	113	121	129	137	145	161	170
55	89	97	105	113	121	129	137	145	161	165
60	86	94	102	110	118	126	133	141	157	160
65	81	88	96	103	110	118	125	132	147	155
70	79	86	93	100	107	114	122	129	143	150
75	76	83	90	97	104	110	117	124	138	145
80	73	80	86	93	100	106	113	120	133	140



If you're diligent in your training, over the weeks and months you'll notice that you're able to train with a higher heart rate for longer periods of time. This means you're getting fitter, your metabolic system is becoming healthier.

A minimum of 250 zone points per week (ZPPW) is good, 300 is better, 350 is best and 400 is 'bestest'. I've called over 400 ZPPW a week, 'defrag territory'. Once you start getting 300 or more ZPPW a week you'll keep yourself in pretty good shape. If you want to achieve huge gains in your aerobic fitness and metabolic health, aim at (at least) 400 ZPPW.

Frequency / intensity / duration	Good	Better	Best	Metabolic defrag and 1% weight loss territory
Frequency: based on sessions per week	5	7	9	11
Duration: based on minutes per session	20	30	40	60 (2 x 30)
Intensity: based on heart rate	65%+	>75%+	>85%+	75%+
Fitbit zone points per day	40	50	60	80+
Fitbit zone points per week	200	250	300	350+

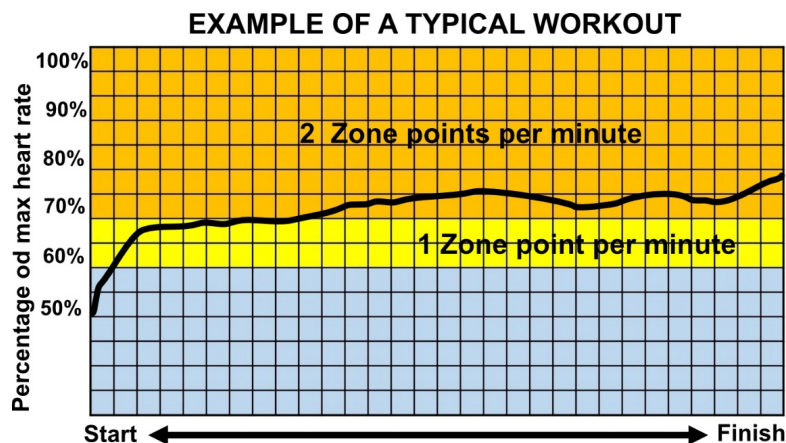
'They say' that your estimated, age-related maximum heart rate (MHR) is (roughly) $220 - \text{your age}$. Therefore, the maximum heart rate of a 40-year-old person is said to be 180bpm. Aiming to work at 70% of maximum heart rate for a 40-year-old is roughly 125 bpm. If you're a 40-year-old person and you're in good physical condition and aerobically trained, you'll be able to sustain 125 bpm for at least 40 minutes.

If you're fitter or less fit than the average fit person, you may need to modify the recommendation.

In a nutshell, here's how it will work

1. You'll need a Fitbit heart rate monitor connected to a smart phone containing the Fitbit app.
2. Set your Fitbit watch to, 'Workout'. Start the workout. You'll be able to check what your heart rate while you're exercising.
3. You'll soon get a feel for what the two heart rate zones are. You'll be able to adjust the intensity of your workout accordingly.
4. The Fitbit app will start counting zone points from the moment you start exercising at a rate of (circa) 60% of your age-related maximum heart rate. At the end of the workout, you'll get a read-out of the number of zone points you've generated.

Here's what the typical workout might look like.





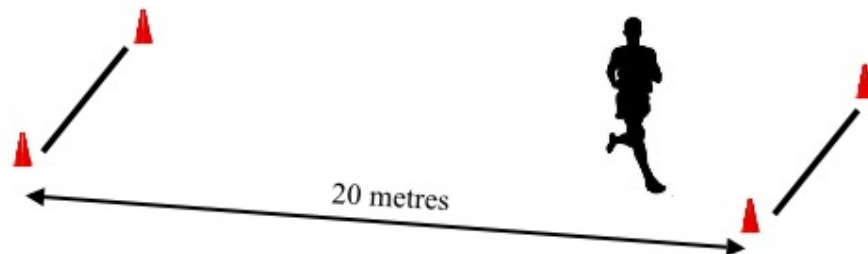
5. HOW THE 20M RUN TEST WORKS

The 20m run test has been derived from the 'Beep' Test, 20m Shuttle Run, a reliable and valid measure of aerobic fitness, particularly for athletes and very fit people. However, the 'Beep' Test is not discriminating enough for 'mere mortals' in that a lot of regular folks drop out before the beginning of level 3 (two minutes).

Accordingly, I've modified the test so each participant keeps walking, shuffling, jogging or running for a full 5 minutes. In the beep test, after 5 minutes people have done 41 laps. For regular folks this is a good score.

In the 20m run I've rounded the scores off and set the 'good score' target at 40 laps for men and 37 for women.

The 20m run test can be done by anyone at any time. There is no need for any special equipment. Simply mark out a 20-metre distance and start moving at a pace which you believe you can sustain for 5 minutes. At the end of each lap, make sure 1 foot goes over the line, then turn around and head back the other way.



A lot of people have an inflated idea of their level of aerobic fitness. They don't realize how much it's declined over the years. They start off like bulls running out of gates. Inevitably they slow down. One of the greatest middle-distance runners of all time, Ron Clarke said, 'Most people can run as fast as I can, they just slow down quicker'.

Another thing about the test is that it is very weight sensitive. Imagine the effort it takes to stop, turn around and then crank up an extra 20Kg or 30Kg more than you weighed 20 years ago? The corollary is that if you start losing weight you can expect an immediate improvement in the number of laps you can run.

All in all, it's a very good field test of metabolic function and I wish more doctors and fitness practitioners would use it so they could see how aerobically fit their clients were.

If you're not in great shape, don't start off too fast. (Try for 5 laps per minute for the first minute and then judge your pace from there.) It may take you a few goes at it to learn what your consistent pace is. If you find you get too tired, slow down, or walk, but continue going for the full five minutes. Make sure at least one foot steps over the end line on each lap. The more laps you do, the fitter you are.

Motivation is what gets
you started. Habit is
what keeps you going.

Jim Ryun



6. 20m RUN SCORING TABLES

These three scoring tables will enable you to rate your performance against other people.

1. Scoring table for regular folks

20m run		Laps									
Men	<22	22	24	26	28	33	32	34	36	38	40
Women	<20	20	22	24	26	28	30	32	34	36	37
Points	0	1	2	3	4	5	6	7	8	9	10

2. Scoring tables for serious athletes and sports people

20m run		Laps									
Laps	Men <44	44	46	48	50	52	54	56	58	60	
Laps	Women <40	40	42	44	46	48	50	52	54	56	
Points	0	2	3	4	5	6	7	8	9	10	

3. 20m run percentage tables for all comers

REGULAR FOLKS FITNESS						
LAPS	POINTS			LAPS	POINTS	
	Men	Women			Men	Women
11	0	0		31	56	62
12	12	12		32	57	66
13	13	13		33	58	70
14	14	14		34	59	72
15	15	15		35	60	74
16	16	16		36	64	76
17	17	17		37	68	78
18	18	18		38	72	80
19	19	19		39	76	82
20	20	20		40	80	84
21	22	22		41	82	86
22	24	24		42	84	88
23	26	26		43	86	90
24	28	28		44	88	95
25	30	30		45	90	100
26	35	35		46	92	
27	40	45		47	94	
28	45	50		48	96	
29	50	55		49	98	
30	55	60		50	100	

ELITE FITNESS		
LAPS	POINTS	
	Men	Women
40	70	72
41	72	74
42	74	78
43	76	82
44	78	86
45	80	88
46	82	90
47	84	91
48	86	92
49	88	93
50	90	94
51	91	95
52	92	96
53	93	97
54	94	98
55	95	99
56	96	100
57	97	
58	98	
59	99	
60	100	

ACKNOWLEDGEMENT

I'm grateful to Peter Ryan - a regular participant in the fitness classes I used to conduct at the Australian Institute of Sport in Canberra - for suggesting that scores be computed out of 100, so that regardless of how many laps he ran, he'd at least get a few points! It's a good idea and I'm proud to acknowledge his role in the development of this test. May he rest in peace.



7. PERSONAL RECORD CARD

[illegible]

Your fitness is 100% mental.
Your body won't go where
your mind doesn't push it.



8. 20M RUN AEROBIC FITNESS SCHOOLS CLASS CHALLENGE

SCHOOL CLASS CHALLENGE

The 20m run is now a school class challenge with classes being able to compare their results with other classes of the same year level throughout Australia.

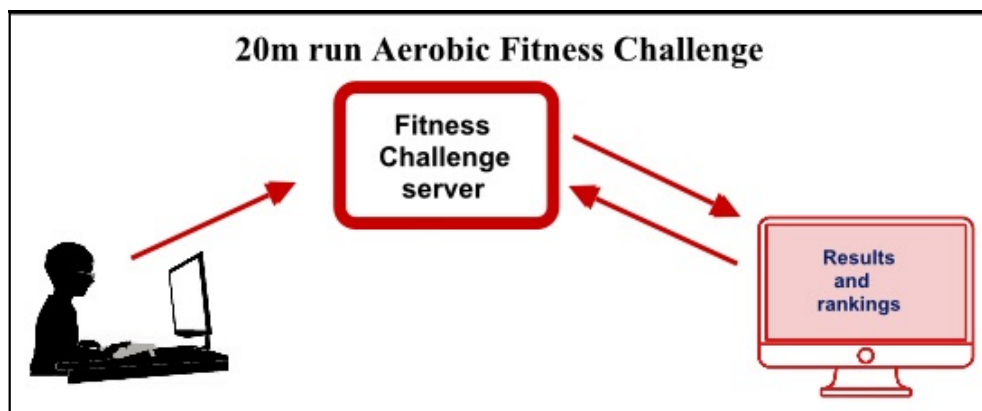
Students have to do is see how many 20m laps they can run in 5 minutes.

At the end of the test, students need to work out the average number of laps of the class (to 2 decimal points) and then enter their results into the school challenge database.

From there they will be able to see how their class ranks compared with other classes of the same year level in their city, state/territory and schools around Australia.

We reckon that children in grade 4 and up are capable of participating.

It's all part of a plan to drive fitness into the frontline of the school PhysEd curriculum.



COMING SOON

individual challenge

Anyone over the age of 15 can take part in the challenge and find how they rank for their gender and age grouping (in 5-year age groupings).

Group challenge

Groups in a range of categories (sporting, work, social ...) will be able to join the challenge and compare themselves with other like-minded groups – based on the average number of laps run.

Register here:

<http://www.20mrun.com>

