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DANCE SPECIFIC FITNESS TESTS

CONTEMPORARY HIGH INTENSITY

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DANCE-SPECIFIC FITNESS TESTS

INTRODUCTION

The Dance-Specific Fitness Tests are the first scientifically validated tests designed specifically for dancers. Research shows that cardiorespiratory fitness is an important part of a dancer's training because the physiological demands of dance performance can be extremely high. Dancers need good stamina to work at their best, delay the onset of fatigue and help prevent fatigue-induced injuries.

The tests have been developed using well-known dance movements. They are used by dance educators, teachers and rehearsal directors to measure a dancer's cardiorespiratory capacity to meet the physiological demands of dance.

The tests are suitable for highly skilled professional dancers of all dance styles as well as recreational and novice dancers of all ages.

There are two tests available on the Trinity Laban website – the Contemporary Test and the High-Intensity Test.

The Contemporary comprises four-minute stages of movement that increase in intensity.

The High-Intensity Test comprises a series of one-minute movement phrases interspersed with rest periods. Both tests have been choreographed to a set tempo with pre-recorded audio accompaniment.

The tests provide 'easy-to-use' methods of evaluating the fitness capabilities of dancers as they improve over time. A dancer's progress is tracked through the recording of his or her heart rate as well as through the observation of his or her dancing.

TEST REQUIREMENTS

GENERAL

The Contemporary Test consists of five progressive four-minute stages of dance. The High-Intensity Test comprises four shorter one-minute bouts of dance. The dancers perform as many stages as they can. During the tests, the dancers' heart rate is measured using either the manual method or a heart rate monitor.

Prior to teaching the tests, it is important to consider the following:

Environment: smooth clean floor, cleared space, appropriate room temperature

Dancers: comfortable practice clothing (not restrictive) and bare feet for the Contemporary and the High-Intensity Tests

Teachers: familiar with all the instructions, warm-up, movement material, and cool down

Hydration: a water fountain or water bottle should be available to all dancers

Identifying risks: students who are currently injured or have had a viral infection (flu, cold etc.) within the last two weeks should not take part.

There may be other particular circumstances that should be considered by the teacher, such as students with asthma.

Before the test begins, the dancers should learn and become familiar with the test's choreography. During the test, it is helpful for the teacher to join in at the beginning of each stage with the group or individual.

Throughout the tests,the dancers should be encouraged to:

/ execute each stage as fully and accurately as possible;

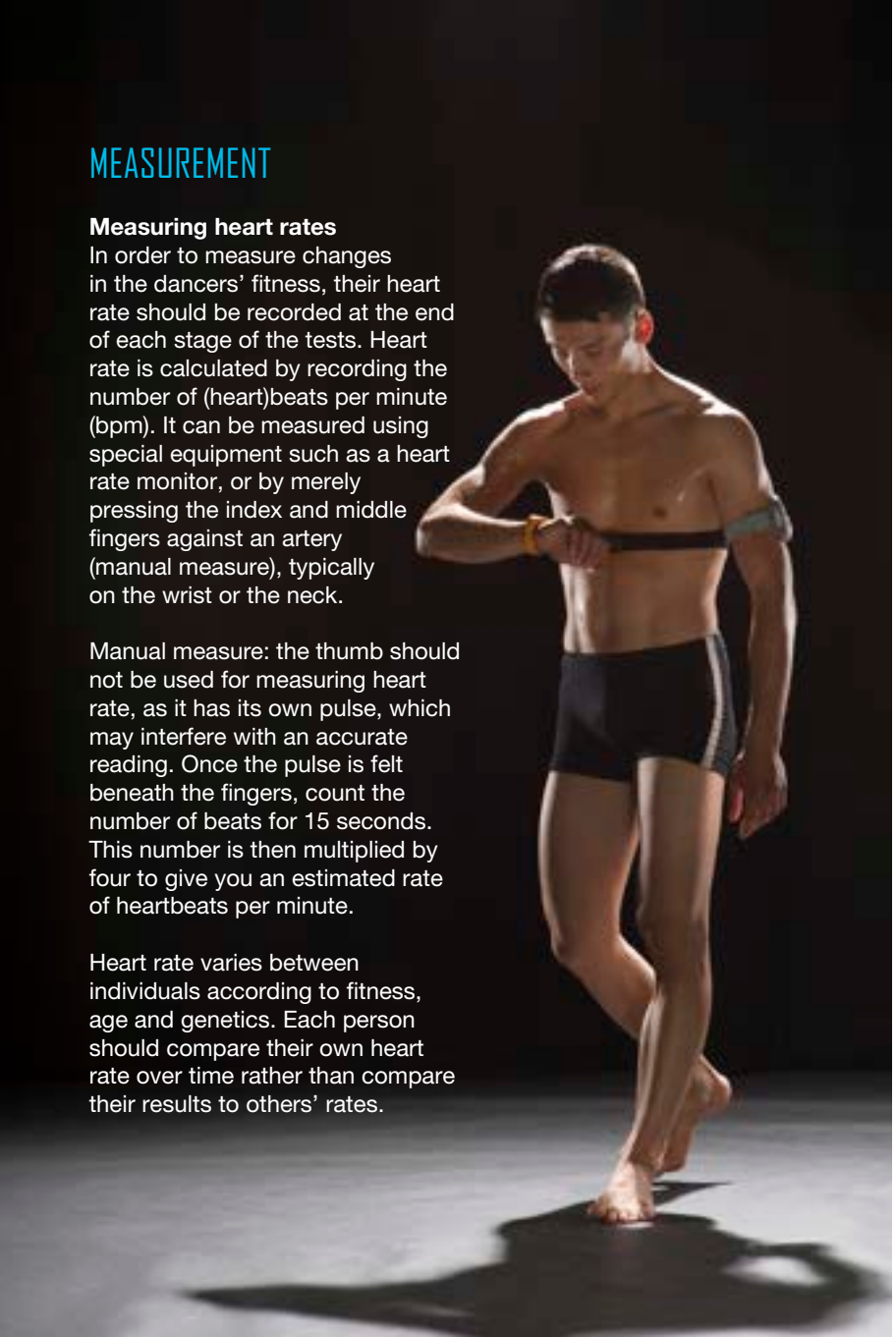
/ maintain the integrity of the movement;

/ start each stage at relatively the same place in space;

/ pick up the movement as quickly as possible if they get lost;

/ not fiddle, fidget, stretch, or perform any 'extra' movements;

/ imagine that they are in a performance setting or on stage.



MEASUREMENT

Measuring heart rates
In order to measure changes in the dancers' fitness, their heart rate should be recorded at the end of each stage of the tests. Heart rate is calculated by recording the number of (heart)beats per minute (bpm). It can be measured using special equipment such as a heart rate monitor, or by merely pressing the index and middle fingers against an artery (manual measure), typically on the wrist or the neck.

Manual measure: the thumb should not be used for measuring heart rate, as it has its own pulse, which may interfere with an accurate reading. Once the pulse is felt beneath the fingers, count the number of beats for 15 seconds. This number is then multiplied by four to give you an estimated rate of heartbeats per minute.

Heart rate varies between individuals according to fitness, age and genetics. Each person should compare their own heart rate over time rather than compare their results to others' rates.

OBSERVING MOVEMENT

A note should be made of any occasions when movement quality or technique becomes compromised. Some pointers to watch for during the tests are:

/ sequencing
/ coordination
/ effort levels
/ travelling distance
/ pointed feet
/ consistent arm positions
/ lunge depth in the Contemporary Test (chest to thigh)
/ jump height
/ overall movement quality

The table below could be used for recording purposes (delete Stage 5 for the High-Intensity Test).

Stage	Heart Rate (beats/min)	Movement Observations	
1			
2			
3			
4			
5			

With a small group of students (fewer than six), it is possible for the teacher to record all heart rates and observations while the group of dancers performs the test together. With a larger group, it is recommended that teachers divide the group into two, each student with a partner. Partners will then take turns to perform the test. One partner dances while the other records the heart rate and movement quality of their dancing partner; they then switch roles.

WARM-UP AND COOL-DOWN

Suggested warm-up
(5–10 minutes)
/ gradual pulse raiser
/ joint mobility exercises
/ short stretches of major muscle groups

Suggested cool-down
(5–10 minutes)
After the test, the dancers should cool down. This could be done on their own while the teacher warms up the second group. It is important that dancers do not suddenly stop moving after the test. Rather, they should gradually decrease their movement until their heart rate has returned to a lower, more normal pace.

CONTEMPORARY TEST

INSTRUCTIONS

The phrases of movement for each stage take place on the diagonal and travel across and back. Each stage is a continuous four minutes. There are five stages in total, which link together continuously to make the entire test 20 minutes. As the test progresses throughout each stage, the intensity, movement and tempo begin to gradually increase, consequently becoming more demanding on the aerobic energy system. Dancers should complete the entire four minutes before proceeding to the next stage. The music CD comprises 5 x 4 minutes of music specifically composed for the required intensity of each stage. The instructions below should be used alongside the DVD film.

Stage 1
(16 Counts one side)

/ 2 pliés that take a ¼ turn in each position: parallel, ¼ turn to right in first, ¼ turn in parallel, ¼ turn in first
/ Walk R, L, R, L, R
/ Lunge L, step R, turn R to step L to face back on yourself
/ No arms or upper body movement
/ Repeat on L side, moving back on the same diagonal – continue for 4 minutes

Stage 2
(16 Counts one side)

/ Building on Stage 1, add arms to pliés
/ On the pliés: feet in parallel = arms in 1st, feet in 1st = arms in 2nd
/ Lunge = opposite arm moves overhead and upper body moves to knee

Stage 3
(24 counts one side)

/ Pliés turn into one single jump and a plié; keep arms
/ After lunge, walk two steps forward then 'spring' three times around in half circle to face the other direction
/ Add arms to each spring = one arm in 2nd position, opposite arm circles overhead

Stage 4
(24 counts one side)

/ The single jump and plié turn into two jumps, keep arms, keep springs

Stage 5
(24 counts one side)

/ Keep everything the same but the five walks in the middle turn into five travelling prances

Research abstract

Wyon, M., Redding, E., Abt, G., Head, A., Craig, N., Sharp, C. (2003). Development, reliability, and validity of a multistage Dance-specific Aerobic Fitness Test (DAFT). Journal of Dance Medicine & Science, 7, 80–84.

The aim of this study was to design a multi-stage dance-specific aerobic field-test that would indicate whether a dancer had the cardiorespiratory capabilities to cope with the demands of dance class and performance. The test consisted of five progressively demanding dance sequences. The technical level of each stage was kept as simple as possible to reduce the effect of economy of movement so that the emphasis of the test was physiologically based rather than skill orientated. The reliability of the stage workloads was measured via oxygen uptake and heart rate using a telemetric gas analyzer. After an initial familiarisation trial, subjects (n = 56: 24 males and 32 females) undertook the test twice within 48 hours. The results showed significant differences in oxygen requirement and heart rates between stages ($F [4, 172] = 803.522$; $p < 0.001$) and gender ($p < 0.01$). The HR-VO2 relationship for the test was $r = 0.94$; $n = 3336$; $p < 0.001$ and the SEE was ± 4.506. Reliability of the DAFT was calculated by determining the coefficient of variation (CV) expressed as a percentage and the percentage change in the mean between trials (% mean). CV ranged between 1.4 and 6.0 and % mean between 0.2 and 6.3 for the stages. The use of dance specific moves and specific levels of the test equating to the mean oxygen demands of class and performance confirmed that logical validity had been achieved. Possible applications to the dance world are the monitoring of heart rate at each of the stages during the year; setting of a target stage attainment for an individual's readiness to undertake class or performance after injury and/or, setting specific aerobic capabilities for dancers post-holiday or for guest artists (below a specific mean heart rate during a designated stage).

The full article is available for download from the DVD as a data file.

HIGH INTENSITY TEST

INSTRUCTIONS

The phrases of movement take place on the diagonal, travelling across and back. Each stage is a continuous one minute followed by a two-minute rest period. The same one minute is repeated four times at the same tempo. As with the previous tests, dancers should complete the entire one minute before proceeding to the next stage. The music CD comprises 4 x 1 minute of music, interspersed with two minutes of resting music. The instructions below should be used alongside the DVD film.

One minute of movement

/ Two jumps in parallel with a tuck of the knees on the second jump, arms in 1st position in front
/ Jump a ¼ turn to the right with two jumps in parallel, arms in 5th position above the head

/ Repeat the above to the other two facings (using ¼ turns to the right)
/ Two springs R, L towards centre of the space
/ Roll to the floor ensuring the back makes contact with the floor
/ Step on R to come up from floor, step L with R arm carving over to hop round into parallel to face the direction you have come from
/ Big jump forward from two feet to two feet using arms to help propel forward
/ Transfer weight down onto arms to push hips in the air
/ Return to feet, come upright and run backwards until end of musical phrase
/ Step back on R ball of foot then L ball of foot with star shape arms, wide stance
/ Fall forward onto R foot, circle L arm as you spring onto L foot
/ Take L foot behind turning back on yourself with three steps ending in place parallel

Start phrase on L

Research abstract

Redding, E., Weller, P., Ehrenberg, S., Irvin, S. Quin, E., Rafferty, S., Wyon, M., Cox, C. (2009). Reliability and validity of a new high intensity dance performance fitness test. Journal of Dance Medicine & Science, 13, 3–9.

While there is currently a validated dance-specific exercise method of measuring aerobic fitness, no such test has been developed to measure high-intensity capabilities in dance. The purpose of this study was to develop an intermittent high-intensity dance-specific fitness test. The test was designed to be able to observe changes in heart rate (HR) thereby allowing for a measurement of physical fitness at high intensities. Sixteen professional dancer participants (N=16) volunteered to take part in this study (m=4. f=12). The fitness test protocol consists of movements that are representative of contemporary dance and contains exercise and rest periods that mimic the intermittent nature of dance. The participants were measured during the test across four trials. The physiological variables measured were HR (b.min-1) for each one minute bout of the four minute test for all trials, oxygen uptake (VO2) throughout the test and end blood lactate (BLa mmol.l) for each trial. In addition, five of the participants (N=5) undertook a maximal oxygen uptake treadmill test in order to compare maximal scores obtained in the treadmill test with those from the dance test. Results show HR consistency across each one minute bout of the test and across each of the four days/trials of testing for all participants indicating that the test is reliable. There was good reliability between bouts of each trial (typical error as % of CV 1.5) intraclass “r” = 0.8 and good reliability between the four trials (typical error as % of CV 2.1) intraclass “r” = 0.82. There was no significant difference between the maximal VO2 and BLa scores established in the treadmill and dance tests indicating validity. The results of this present study indicate that the high intensity dance specific test is a reliable and valid means of assessing and monitoring the cardiovascular fitness of dancers. The test allows dancers to be assessed within an environment that they are used to (the studio) using a mode of exercise that is relevant (dance) and is of an adequate intensity to be representative of performance.

The full article is available for download from the DVD as a data file.

TRINITY LABAN DANCE SCIENCE

Track		Duration
1. Contemporary Stage 1	O. Newman	4:10
2. Contemporary Stage 2	O. Newman	4:16
3. Contemporary Stage 3	O. Newman	4:10
4. Contemporary Stage 4	O. Newman	4:22
5. Contemporary Stage 5	O. Newman	4:12
6. High-Intensity	O. Newman	15.22

CREDITS

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Pianist, Ballet Test: Andrew Tait
Video Editor and DVD author: Ivan Thorley
Collaborator: Emily Twitchett
Dancers: Chloe Horrell (video), James Pett & Jessica Wright
(Studio Wayne McGregor dancers in booklet)

Thanks to Sarah Irvine and Edel Quinn for their contribution

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