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UWTSD Sport and Exercise Science Physiological Testing Protocols

**1-minute sit-up test of muscular
endurance.**

Taken From:

Lab 26

**Housh, T.J., Cramer, J.T., Weir, J.P., Beck, T.W. and
Johnson, G.O. (2016). Laboratory manual for
Exercise Physiology, Exercise Testing and Physical
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BACKGROUND

Muscular endurance describes the ability to perform repeated muscle actions.^{1,2,3,4} Muscular endurance is an important component of physical fitness, because most activities of daily living, as well as sporting activities, require multiple sub-maximal muscle actions. For example, household activities such as gardening, lawn mowing, shovelling snow, and vacuuming require repeated actions that often utilise the same muscles. Furthermore, although success in some sports, such as power lifting and Olympic lifting, is based on the ability to perform a single, maximal muscle action, most sports, such as rowing, swimming, cross-country skiing, bicycling, wrestling, boxing, sprinting, baseball pitching, and many others, involve repeated muscle actions. Thus, although muscular strength and muscular endurance are typically related, they involve the assessment of separate components of physical fitness.

The 1-Minute Sit-up Test is commonly used to assess the endurance of the abdominal muscles. Poor abdominal muscle endurance (as well as strength) is often thought to contribute to low back pain.¹ Thus, the 1-Minute Sit-up Test can provide valuable information about the potential risk of developing low back pain.

In this laboratory, you will learn to conduct the 1-Minute Sit-up Test of muscular endurance and to compare the results of the test to the norms in tables 26.1 and 26.2 to classify the subject based on age and gender.²

KNOW THESE TERMS & ABBREVIATIONS

- muscular endurance = the ability to perform repeated muscle actions
- muscular strength = the maximal force that can be exerted by a specific muscle or muscle group

TABLE 26.1 Male norms for the 1-Minute Sit-Up Test (number of correctly performed sit-ups).^{2,3}

Classification	Age (years)					
	18–25	26–35	36–45	46–55	56–65	66+
Excellent	60–50	55–46	50–42	50–36	42–32	40–29
Good	48–45	45–41	40–36	33–29	29–26	26–22
Above average	42–40	38–36	34–30	28–25	24–21	21–20
Average	38–36	34–32	29–28	24–22	20–17	18–16
Below average	34–32	30–29	26–24	21–18	16–13	14–12
Poor	30–26	28–24	22–18	17–13	12–9	10–8
Very poor	24–12	21–6	16–4	12–4	8–2	6–2

Female norms for the 1-Minute Sit-Up Test (number of correctly performed sit-ups).^{2,3}

TABLE 26.2

Classification	Age (years)					
	18–25	26–35	36–45	46–55	56–65	66+
Excellent	55–44	54–40	50–34	42–28	38–25	36–24
Good	41–37	37–33	30–27	25–22	21–18	22–18
Above average	36–33	32–29	26–24	21–18	17–13	16–14
Average	32–29	28–25	22–20	17–14	12–10	13–11
Below average	28–25	24–21	18–16	13–10	9–7	10–6
Poor	24–20	20–16	14–10	9–6	6–4	4–2
Very poor	17–4	12–1	6–1	4–0	2–0	1–0

PROCEDURES^{2,3}

1. Have the subject lie on his or her back, with knees bent, feet flat on the floor, and fingers next to the ears. The subject's heels should be approximately 18 inches from the buttocks (photo 26.1). Have a partner hold the subject's feet firmly on the floor for stability.^{2,3}
2. The subject should touch each elbow to the opposite knee, alternately, and perform as many sit-ups as possible in 1 minute (photo 26.2). The partner should count the number of sit-ups correctly performed during the test.^{2,3}
3. Record the number of correctly performed sit-ups on worksheet 26.1.



PHOTO 26.1 Sit-up test. The subject's heels should be approximately 18 inches from the buttocks.



PHOTO 26.2 Sit-up test. A partner holds the subject's feet firmly on the floor while the subject touches each elbow to the opposite knee.

Worksheet 26.1 THE 1-MINUTE SIT-UP TEST FORM

Name _____

Date _____

Gender: _____

Age: _____

1. Number of correctly performed sit-ups = _____
2. Classification = _____ (see tables 26.1 and 26.2)

REFERENCE

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3. Morrow, J. R., Jackson, A. W., Disch, J. G., and Mood, D. P. *Measurement and Evaluation in Human Performance*, 3rd edition. Champaign, IL: Human Kinetics, 2005, pp. 251–252.
4. Ryan, E. D., and Cramer, J. T. Fitness testing protocols and norms. In *NSCA's Essentials of Personal Training*, eds. R. W. Earle and T. K. Baechle, 2nd edition. Champaign, IL: Human Kinetics, 2004.

