

Case Study I

A 50-yr-old nonsmoking male was recently invited by colleagues to participate in a 10-km trail run. Currently, he walks at a moderate intensity for 40 min every Monday, Wednesday, and Friday — something he has done “for years.” His goal is to run the entire race without stopping, and he is seeking training services. He reports having what he describes as a “mild heart attack” at 45 yr old, completed cardiac rehabilitation, and has had no problems since. He takes a statin, an angiotensin-converting enzyme (ACE) inhibitor, and aspirin daily. During the last visit with his cardiologist, which took place 2 yr ago, the cardiologist noted no changes in his medical condition.

Case Study II

A 22-yr-old recent college graduate is joining a gym. Since becoming an accountant 6 mo ago, she no longer walks across campus or plays intramural soccer and has concerns about her now sedentary lifestyle. Although her body mass index (BMI) is slightly above normal, she reports no significant medical history and no symptoms of any diseases, even when walking up three flights of stairs to her apartment. She would like to begin playing golf.

Case Study III

A 45-yr-old former collegiate swimmer turned avid lifelong triathlete who trains at least 60 min · d⁻¹, 6 d · wk⁻¹ requests assistance with run training. His only significant medical history is a series of overuse injuries to his shoulders and Achilles tendon. In recent weeks, he notes his vigorous intensity workouts are unusually difficult and reports feeling constriction in his chest with exertion — something he attributes to deficiencies in core strength. Upon further questioning, he explains that the chest constriction is improved with rest and that he often feels dizzy during recovery.

Case Study IV

A 60-yr-old woman is beginning a professionally led walking program. Two years ago, she had a drug-eluting stent placed in her left anterior descending coronary artery after a routine exercise stress test revealed significant ST-segment depression. She completed a brief cardiac rehabilitation program in the 2 mo following the procedure but has been inactive since. She reports no signs or symptoms and takes a cholesterol-lowering statin and antiplatelet medications as directed by her cardiologist.

Case Study V

A 35-yr-old business consultant is in town for 2 wk and seeking a temporary membership at a fitness club. She and her friends have been training at a moderate-to-vigorous intensity for a long-distance charity bike ride for the past 16 wk; she is unable to travel with her bike and she does not want to lose her fitness. She reports no current symptoms of cardiovascular (CV) or metabolic disease and has no medical history except hyperlipidemia, for which she takes a cholesterol-lowering statin daily.

	Case Study I	Case Study II	Case Study III	Case Study IV	Case Study V
Currently participates in regular exercise?	Yes	No	Yes	No	Yes
Known CV, metabolic, or renal disease?	Yes	No	No	Yes	No
Signs or symptoms suggestive of disease?	No	No	Yes	No	No
Desired intensity?	Vigorous	Moderate	Vigorous	Moderate	Vigorous
Medical clearance needed?	Yes	No	Yes	Yes	No

Case Study I

Female, age 21 yr, smokes socially on weekends (~10–20 cigarettes). Drinks alcohol one or two nights a week, usually on weekends. Height = 63 in (160 cm), weight = 124 lb (56.4 kg), BMI = $22.0 \text{ kg} \cdot \text{m}^{-2}$. RHR = $76 \text{ beats} \cdot \text{min}^{-1}$, resting BP = 118/72 mm Hg. Total cholesterol = $178 \text{ mg} \cdot \text{dL}^{-1}$ ($4.61 \text{ mmol} \cdot \text{L}^{-1}$), LDL-C = $98 \text{ mg} \cdot \text{dL}^{-1}$ ($2.54 \text{ mmol} \cdot \text{L}^{-1}$), HDL-C = $62 \text{ mg} \cdot \text{dL}^{-1}$ ($1.60 \text{ mmol} \cdot \text{L}^{-1}$), FBG = $96 \text{ mg} \cdot \text{dL}^{-1}$ ($5.33 \text{ mmol} \cdot \text{L}^{-1}$). Currently taking oral contraceptives. Attends 45 min moderate intensity group exercise class two to three times a week; both parents living and in good health.

Case Study II

Man, age 45 yr, nonsmoker. Height = 72 in (182.9 cm), weight = 168 lb (76.4 kg), BMI = $22.8 \text{ kg} \cdot \text{m}^{-2}$. RHR = $64 \text{ beats} \cdot \text{min}^{-1}$, resting BP = 124/78 mm Hg. Total cholesterol = $187 \text{ mg} \cdot \text{dL}^{-1}$ ($4.84 \text{ mmol} \cdot \text{L}^{-1}$), LDL-C = $103 \text{ mg} \cdot \text{L}^{-1}$ ($2.67 \text{ mmol} \cdot \text{L}^{-1}$), HDL-C = $39 \text{ mg} \cdot \text{dL}^{-1}$ ($1.01 \text{ mmol} \cdot \text{L}^{-1}$), FBG = $88 \text{ mg} \cdot \text{dL}^{-1}$ ($4.84 \text{ mmol} \cdot \text{L}^{-1}$). Recreationally competitive runner, runs 4–7 d $\cdot \text{wk}^{-1}$, completes one to two marathons and numerous other road races every year. No medications other than over-the-counter ibuprofen as needed. Father died at age 51 yr of a heart attack; mother died at age 81 yr of cancer.

Case Study III

Man, age 44 yr, nonsmoker. Height = 70 in (177.8 cm), weight = 216 lb (98.2 kg), BMI = $31.0 \text{ kg} \cdot \text{m}^{-2}$. RHR = $62 \text{ beats} \cdot \text{min}^{-1}$, resting BP = 128/84 mm Hg. Total serum cholesterol = $184 \text{ mg} \cdot \text{dL}^{-1}$ ($4.77 \text{ mmol} \cdot \text{L}^{-1}$), LDL-C = $106 \text{ mg} \cdot \text{dL}^{-1}$ ($2.75 \text{ mmol} \cdot \text{L}^{-1}$), HDL-C = $44 \text{ mg} \cdot \text{dL}^{-1}$ ($1.14 \text{ mmol} \cdot \text{L}^{-1}$), FBG = $130 \text{ mg} \cdot \text{dL}^{-1}$ ($7.22 \text{ mmol} \cdot \text{L}^{-1}$). Reports that he does not have time to exercise. Father had Type 2 diabetes and died at age 67 yr of a heart attack; mother living, no CVD; no medications.

Case Study IV

Woman, age 36 yr, nonsmoker. Height = 64 in (162.6 cm), weight = 108 lb (49.1 kg), BMI = $18.5 \text{ kg} \cdot \text{m}^{-2}$. RHR = $61 \text{ beats} \cdot \text{min}^{-1}$, resting BP = 142/86 mm Hg. Total cholesterol = $174 \text{ mg} \cdot \text{dL}^{-1}$ ($4.51 \text{ mmol} \cdot \text{L}^{-1}$), blood glucose normal with insulin injections. Type 1 diabetes mellitus diagnosed at age 7 yr. She teaches high intensity cardio kickboxing classes three times per week and walks at a moderate intensity for approximately 45 min four times a week; both parents in good health with no history of CVD.

	Case Study I	Case Study II	Case Study III	Case Study IV
CVD risk factors:				
Age?	No	Yes	No	No
Family history?	No	Yes	No	No
Cigarette smoking?	Yes	No	No	No
Physical inactivity?	No	No	Yes	No
Obesity?	No	No	Yes	No
Hypertension?	No	No	Yes	Yes
Dyslipidemia?	No	Yes	No	No
Diabetes?	No	No	Yes	Yes
Negative risk factor:				
HDL-C $\geq 60 \text{ mg} \cdot \text{dL}^{-1}$	Yes	No	No	No
Number of CVD risk factors	Zero	Three	Four	Two