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第 8 版

# ACSM运动测试与 运动处方指南

ACSM's Guidelines for  
Exercise Testing and Prescription

主译 王正珍



人民卫生出版社

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ACSM 运动测试与运动处方指南 第8版

王正珍等译

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在 1675 年 2 月 5 日写给朋友 Robert Hooke 的一封信中,英国数学家和物理学家牛顿写道:“如果说我比别人看得更远些,那是因为我站在巨人的肩上。”尽管牛顿生活在 1642~1727 年之间,但这句名言在近 335 年之后仍堪称经典。这本 ACSM 指南源于 ACSM 认证和注册委员会(CCRB,之前称为“认证与教育委员会”和“预防与运动康复委员会”)。尽管这个项目仍然由 CCRB 主办,但它已被 ACSM 成员与健康/体适能和临床实践的成员和非成员推广到全世界。今天,它已成为任何参与运动计划或运动测试人士手中的教科书。同时,它也是 ACSM 出版的其他支撑书籍的资源(《ACSM 运动测试与运动处方指南资源手册》、《ACSM 临床运动生理学手册》、《ACSM 个人训练手册》、《ACSM 健康相关体适能评估手册》和《ACSM 慢性疾病和残疾人运动管理》)。截至第 8 版,参与本书编写的人员已有数百人,以下列出了每一版的主要负责人,也就是牛顿所说的“巨人”。

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# 前 言

本版《ACSM 运动测试与运动处方指南》的读者将发现以下四点改进：描述更少了；参考文献更少了；有更多的表格、专栏和插图；它与《ACSM 运动测试与运动处方指南资源手册》、《ACSM 临床运动生理学手册》、《ACSM 认证复习手册》和《ACSM 慢性疾病和残疾人运动管理》同时出版。最后编委们达成共识，本版将更加指南化，而不仅是对各种资源的汇总。回顾本书的第 1 版，它是一本为健康/体适能和临床专业人士提供信息的便捷手册。随着更多科学和临床信息的应用，这本指南从第 1 版至第 7 版越来越厚，字体越来越小。我们的目的是增加本书的可读性，从而使读者可以更容易地找到一条指南、一个简短的解释和一篇或两篇特殊的文献。我们将扩展的解释和全部资源置于与这本指南一起出版的其他书目中。我们相信这一版对于健康/体适能和临床运动专业人士、内科医师、护士、医师助理、物理和康复治疗师、营养学家以及保健管理者来说是一种更便于使用的形式。

同时我们也发现这本指南是在全世界范围内被广泛应用于递增运动测试和运动处方的权威教科书。出于这一原因，我们邀请了各大洲几乎每一个国家的国际知名学者和医师针对本书的科学性应用和他们各自国家对这个指南的可接受性进行评论和建议。我们希望这本指南可应用于全世界，同时可以翻译成多种语言以供不同语言的读者使用（注：翻译本书前应获得出版商的许可）。

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## 10 前 言

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前言中编辑们有机会对所有帮助这个项目成功完成的工作人员表示感谢。与本文主题一致,我们用简短的还未流逝的文字诚挚地表达对我们的爱人、朋友和家人的感谢。他们牺牲了2年时间让我们来完成这些工作,在此期间我们无法陪伴他们共同进餐、度过周末和假期。我们也要感谢出版商,尤其是 Emily Lupash, 获奖编辑; Andrea Klingler, 常务编辑; Christen Murphy, 市场管理; Debra Passan, 助理编辑。我们感谢之前 ACSM 国家认证指导 Mike Niederpruem、Richard Cotton, 认证助理指导 Hope Wood, 认证计划协调人 Beth Muhlenkamp、Kathy Berlin, 认证助

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注:

《ACSM 运动测试与运动处方指南》第 8 版中所包含的观点和信息是实践指南而不是实践标准。这个区别是十分重要的,因为它具有特殊的法律意义。这一区别给予运动专业人士在运动过程中根据需要适时地改进这些指南,并作出独立而明智判断的自由。《ACSM 运动测试与运动处方指南》展现了一个框架结构,依靠这个框架结构可以专业化地、尽责地满足个体运动者或患者的需要,并成为立法或法律要求的必备条件。

(王正珍 译)

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# 缩 略 语

AACVPR	American Association of Cardiovascular and Pulmonary Rehabilitation
ABI	ankle/brachial systolic pressure index
ACE	angiotensin-converting enzyme
ACGIH	American Conference of Governmental Industrial Hygienists
ACOG	American College of Obstetricians and Gynecologists
ACP	American College of Physicians
ACS	Acute coronary syndromes
ACSM	American College of Sports Medicine
ADL	activities of daily living
AHA	American Heart Association
AICD	automatic implantable cardioverter defibrillator
AIHA	American Industrial Hygiene Association
AMA	American Medical Association
AMS	acute mountain sickness
AST	aspartate aminotransferase
AV	atrioventricular
BIA	bioelectrical impedance analysis
BLS	basic life support
BMI	body mass index
BP	blood pressure
BR	breathing reserve
BUN	blood urea nitrogen
CABG(S)	coronary artery bypass graft (surgery)
CAD	coronary artery disease
CDC	U. S. Centers for Disease Control and Prevention
CES	ACSM Certified Clinical Exercise Specialist
CHF	congestive heart failure
CHO	carbohydrate
CI	cardiac index
COPD	chronic obstructive pulmonary disease

## 24 缩 略 语

CPAP	continuous positive airway pressure
CPK	creatine phosphokinase
CPR	cardiopulmonary resuscitation
CRQ	Chronic Respiratory Questionnaire
CVD	atherosclerotic cardiovascular disease
DBP	diastolic blood pressure
DOMS	delayed onset muscle soreness
ECG	electrocardiogram (electrocardiographic)
EF	ejection fraction
EIB	exercise-induced bronchoconstriction
EIH	exercise-induced hypotension
ERV	expiratory reserve volume
ES	ACSM Exercise Specialist
ETT	ACSM Exercise Test Technologist?
FC	functional capacity
FEV <sub>1.0</sub>	forced expiratory volume in one second
FFM	fat-free mass
FICO <sub>2</sub>	fraction of inspired carbon dioxide
FIO <sub>2</sub>	fraction of inspired oxygen
FN	false negative
FP	false positive
FRV	functional residual volume
FVC	forced vital capacity
GEL	ACSM Group Exercise Leader?
GXT	graded exercise test
HAPE	high-altitude pulmonary edema
HDL	high-density lipoprotein
HFD	ACSM Health/Fitness Director?
HFI	ACSM Health/Fitness Instructor?
HFS	ACSM Certified Health Fitness Specialist
HR	heart rate
HR <sub>max</sub>	maximal heart rate
HRR	heart rate reserve
HR <sub>rest</sub>	resting heart rate
IC	inspiratory capacity
ICD	implantable cardioverter defibrillator
IDDM	insulin-dependent diabetes mellitus
JCC	Jewish Community Center

KSAs	knowledge, skills, and abilities
LAD	left axis deviation
LBBB	left bundle-branch block
LDH	lactate dehydrogenase
LDL	low-density lipoprotein
L-G-L	Lown-Ganong-Levine
LLN	lower limit of normal
LV	left ventricle (left ventricular)
MCHC	mean corpuscular hemoglobin concentration
MET	metabolic equivalent
MI	myocardial infarction
MUGA	multigated acquisition (scan)
MVC	maximal voluntary contraction
MVV	maximal voluntary ventilation
NCEP	National Cholesterol Education Program
NIDDM	non-insulin-dependent diabetes mellitus
NIH	National Institutes of Health
NIOSH	National Institute for Occupational Safety and Health
NYHA	New York Heart Association
PAC	premature atrial contraction
PaO <sub>2</sub>	partial pressure of arterial oxygen
PAR-Q	Physical Activity Readiness Questionnaire
PD	ACSM Program Director <sup>SM</sup>
PE <sub>max</sub>	maximal expiratory pressure
PI <sub>max</sub>	maximal inspiratory pressure
PNF	proprioceptive neuromuscular facilitation
PO <sub>2</sub>	partial pressure of oxygen
PTCA	percutaneous transluminal coronary angioplasty
PVC	premature ventricular contraction
PVD	peripheral vascular disease
Q̇	cardiac output
RAD	right axis deviation
RAL	recommended alert limit
RBBB	right bundle-branch block
RCEP	ACSM Registered Clinical Exercise Physiologist?
rep	repetition
RER	respiratory exchange ratio
RIMT	resistive inspiratory muscle training



## 26 缩 略 语

1-RM	one-repetition maximum
RPE	rating of perceived exertion
RQ	respiratory quotient
RV	residual volume
RVG	radionuclide ventriculography
RVH	right ventricular hypertrophy
SaO <sub>2</sub>	percent saturation of arterial oxygen
SBP	systolic blood pressure
SEE	standard error of estimate
SPECT	single-photon emission computed tomography
SVT	supraventricular tachycardia
THR	target heart rate
TLC	total lung capacity
TN	true negative
TP	true positive
TPR	total peripheral resistance
TV	tidal volume
VC	vital capacity
$\dot{V}CO_2$	volume of carbon dioxide per minute
$\dot{V}E$	expired ventilation per minute
$\dot{V}E_{max}$	maximal expired ventilation
$\dot{V}I$	inspired ventilation per minute
$\dot{V}O_2$	volume of oxygen consumed per minute
$\dot{V}O_{2max}$	maximal volume of oxygen consumed per minute (maximal oxygen uptake, maximal oxygen consumption)
$\dot{V}O_{2peak}$	peak oxygen uptake
$\dot{V}O_2R$	oxygen uptake reserve
% $\dot{V}O_2R$	percentage of oxygen uptake reserve
VT	ventilatory threshold
WBGTT	wet-bulb globe temperature
WHR	waist-to-hip ratio
W-P-W	Wolff-Parkinson-White
YMCA	Young Men's Christian Association
YWCA	Young Women's Christian Association