Form 15.1 Maximal Oxygen Consumption

Homework

Name: _____ Date: _____ Score: _____

Gender: **M** Initials: **AA** Age (y): **22** Height (cm): **172** Weight (kg): **73.4**

T_A (°C): **22** P_B (mm Hg): **756** RH (%): **30** STPD CF: _____ *(Table 15.8)*

Time	$\dot{V}_{E\ ATPS}$ ($L \cdot min^{-1}$)	$\dot{V}_{E\ STPD}$ ($L \cdot min^{-1}$)	F_EO_2	F_ECO_2	F_EN_2	HR (bpm)	RPE
3:00	**27.0**		**0.1534**	**0.0452**		**114**	**8**
6:00	**53.6**		**0.1576**	**0.0465**		**148**	**10**
9:00	**79.2**		**0.1622**	**0.0452**		**173**	**13**
12:00	**128.6**		**0.1717**	**0.0430**		**192**	**18**

Abs $\dot{V}O_2$ ($L \cdot min^{-1}$)	Rel $\dot{V}O_2$ ($ml \cdot kg^{-1} \cdot min^{-1}$)	$\dot{V}CO_2$ ($L \cdot min^{-1}$)	RER	% Energy from Fat	% Energy from CHO	Energy ($kcal \cdot min^{-1}$)	Energy ($kJ \cdot min^{-1}$)

Equations:

$\dot{V}_{E\ STPD} = \dot{V}_{E\ ATPS} * STPD\ CF$

$F_EN_2 = 1.0000 - (F_EO_2 + F_ECO_2)$

Absolute $\dot{V}O_2$ ($L \cdot min^{-1}$) $= [\dot{V}_{E\ STPD} * F_EN_2 * 0.2648] - [\dot{V}_{E\ STPD} * F_EO_2]$

Relative $\dot{V}O_2$ ($ml \cdot kg^{-1} \cdot min^{-1}$) = Absolute $\dot{V}O_2$ ($L \cdot min^{-1}$) * 1000 / Body wt (kg)

$\dot{V}CO_2$ ($L \cdot min^{-1}$) $= [\dot{V}_{E\ STPD} * F_ECO_2]$

Respiratory exchange ratio (RER) = $\dot{V}CO_2$ ($L \cdot min^{-1}$) / $\dot{V}O_2$ ($L \cdot min^{-1}$) *(See Table 15.9 for fuel use)*

Energy ($kcal \cdot min^{-1}$) = $\dot{V}O_2$ ($L \cdot min^{-1}$) * 5 ($kcal \cdot L^{-1}$) *Note:* (1 kcal = 4.186 kJ)

Criteria for max: ☐ Plateau in $\dot{V}O_2$ ☐ RER ≥ 1.05–1.15 ☐ HR w/in 10–12 bpm of HR_{max} ☐ RPE ≥ 18–19

Absolute $\dot{V}O_2max$ ($L \cdot min^{-1}$) = _____ Relative $\dot{V}O_2max$ ($ml \cdot kg^{-1} \cdot min^{-1}$) = _____

Aerobic fitness category *(from Table 15.10)*: _____

Evaluation / comments: _____

Form 15.2 Maximal Oxygen Consumption

Lab Results

Name: _____ Date: _____ Score: _____

Gender: _____ Initials: _____ Age (y): _____ Height (cm): _____ Weight (kg): _____

T_A (°C): _____ P_B (mm Hg): _____ RH (%): _____ STPD CF: _____ *(Table 15.8)*

Time	$\dot{V}_{E\ ATPS}$ ($L \cdot min^{-1}$)	$\dot{V}_{E\ STPD}$ ($L \cdot min^{-1}$)	F_EO_2	F_ECO_2	F_EN_2	HR (bpm)	RPE

Abs $\dot{V}O_2$ ($L \cdot min^{-1}$)	Rel $\dot{V}O_2$ ($ml \cdot kg^{-1} \cdot min^{-1}$)	$\dot{V}CO_2$ ($L \cdot min^{-1}$)	RER	% Energy from Fat	% Energy from CHO	Energy ($kcal \cdot min^{-1}$)	Energy ($kJ \cdot min^{-1}$)

Equations:

$\dot{V}_{E\ STPD} = \dot{V}_{E\ ATPS} * STPD\ CF$

$F_EN_2 = 1.0000 - (F_EO_2 + F_ECO_2)$

Absolute $\dot{V}O_2$ ($L \cdot min^{-1}$) $= [\dot{V}_{E\ STPD} * F_EN_2 * 0.2648] - [\dot{V}_{E\ STPD} * F_EO_2]$

Relative $\dot{V}O_2$ ($ml \cdot kg^{-1} \cdot min^{-1}$) = Absolute $\dot{V}O_2$ ($L \cdot min^{-1}$) * 1000 / Body wt (kg)

$\dot{V}CO_2$ ($L \cdot min^{-1}$) $= [\dot{V}_{E\ STPD} * F_ECO_2]$

Respiratory exchange ratio (RER) = $\dot{V}CO_2$ ($L \cdot min^{-1}$) / $\dot{V}O_2$ ($L \cdot min^{-1}$) *(See Table 15.9 for fuel use)*

Energy ($kcal \cdot min^{-1}$) = $\dot{V}O_2$ ($L \cdot min^{-1}$) * 5 ($kcal \cdot L^{-1}$) *Note:* (1 kcal = 4.186 kJ)

Criteria for max: ☐ Plateau in $\dot{V}O_2$ ☐ RER ≥ 1.05–1.15 ☐ HR w/in 10–12 bpm of HR_{max} ☐ RPE ≥ 18–19

Absolute $\dot{V}O_2max$ ($L \cdot min^{-1}$) = _____ Relative $\dot{V}O_2max$ ($ml \cdot kg^{-1} \cdot min^{-1}$) = _____

Aerobic fitness category *(from Table 15.10)*: _____

Evaluation / comments: _____