Sportteljesítmény

Genetika	XX, XY, epigenetika
Edzettség	erő, állóképesség, gyorsaság, reakcióidő
Technika	képességek, készségek
Pszichés	pszichés felkészültség, mentális képességek, versenyző alkat, „fejben dől el”, „fejben ott van?”, csapatsportok
Technológia	elsősorban technikai sportok, de!
Taktikai	rutin, érettség és fegyelem
Táplálkozás	energiatöltöttség, hidráció, salakanyagok
Körülmények (felmérhető)	sorozatterhelés, időjárás, „idegenben”
Körülmények (véletlenszerű)	sorsolás, bíró, kifelé, befelé pattan, stb.
Teljesítményfokozók	legális: $, farmakológiai (dopping), élettani (fürdő, tape, masszázs), mechanikai (technikai), pszichológiai, étrendi
Teljesítményfokozók	illegális: dopping, sportszerű(tlen)ség, kémiai és fizikai manipuláció

Sport performance

Physical fitness	strenght, endurance, velocity, reaction time
Technique	skills
Psychological	psychological preparedness, mental ability, competitor
Technology	Primary technical sports, but!
Tactical	Routine, maturity and discipline
Nutrition	Energy balance, hydration, excreta
Other conditions I (plannable)	Series load, weather, "away„ or „home”
Other conditions II (random)	Draw, judge, etc.

NAPI KALÓRIASZÜKSÉGLET KALKULÁTOR

Kérjük, hogy amennyiben hibát tapasztalnak, forduljanak hozzánk közvetlenül az alábbi cí
info[kukac]orvosiLexikon.hu

Köszönjük!

Adja meg a következő adatokat

Az Ön neme	Férfi	
Az Ön testmagassága	180	centiméter
Az Ön testsúlya	80	kilogramm
Az Ön életkora	30	év
Az Ön aktivitása	Mérsékelt (heti 1-2 óra sport/szellemi foglakozású)	

☑ Automatikus újrakalkulálás KALKULÁCIÓ

Eredmények

BMR (alapanyagcsere)	1858.00			

Tápanyagszükséglet

I. Testsúlyának megőrzéséhez

Kalória (kcal)	2554.75	kcal		
Szénhidrátok (55%)	1405.11	kcal =	351.28	gramm
Fehérjék (15%)	383.21	kcal =	95.80	gramm
Zsírok (30%)	766.43	kcal =	85.15	gramm

NAPI KALÓRIASZÜKSÉGLET KALKULÁTOR

Kérjük, hogy amennyiben hibát tapasztalnak, forduljanak hozzánk közvetlenül az alábbi címen:
info[kukac]orvosiLexikon.hu

Köszönjük!

Adja meg a következő adatokat

Az Ön neme	Férfi	
Az Ön testmagassága	180	centiméter
Az Ön testsúlya	80	kilogramm
Az Ön életkora	30	év
Az Ön aktivitása	Átlagon felüli (rendszeres intenzív sport/fizikai munkakör)	

☑ Automatikus újrakalkulálás KALKULÁCIÓ

Eredmények

BMR (alapanyagcsere)	1858.00			

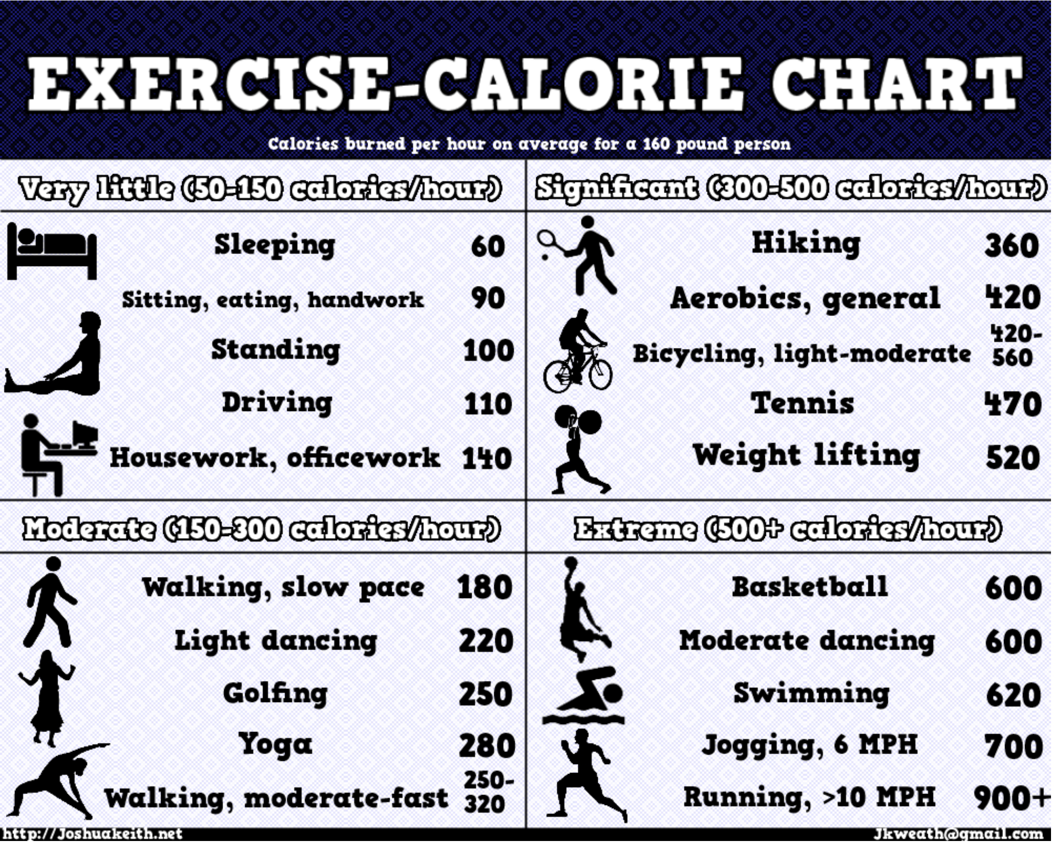
Tápanyagszükséglet

I. Testsúlyának megőrzéséhez

Kalória (kcal)	3205.05	kcal		
Szénhidrátok (55%)	1762.78	kcal =	440.69	gramm
Fehérjék (15%)	480.76	kcal =	120.19	gramm
Zsírok (30%)	961.52	kcal =	106.82	gramm

Ho

http://orvosilexikon.hu/kalkulatorok/napi-kaloriaszukseglet-kalkulator



EXERCISE-CALORIE CHART

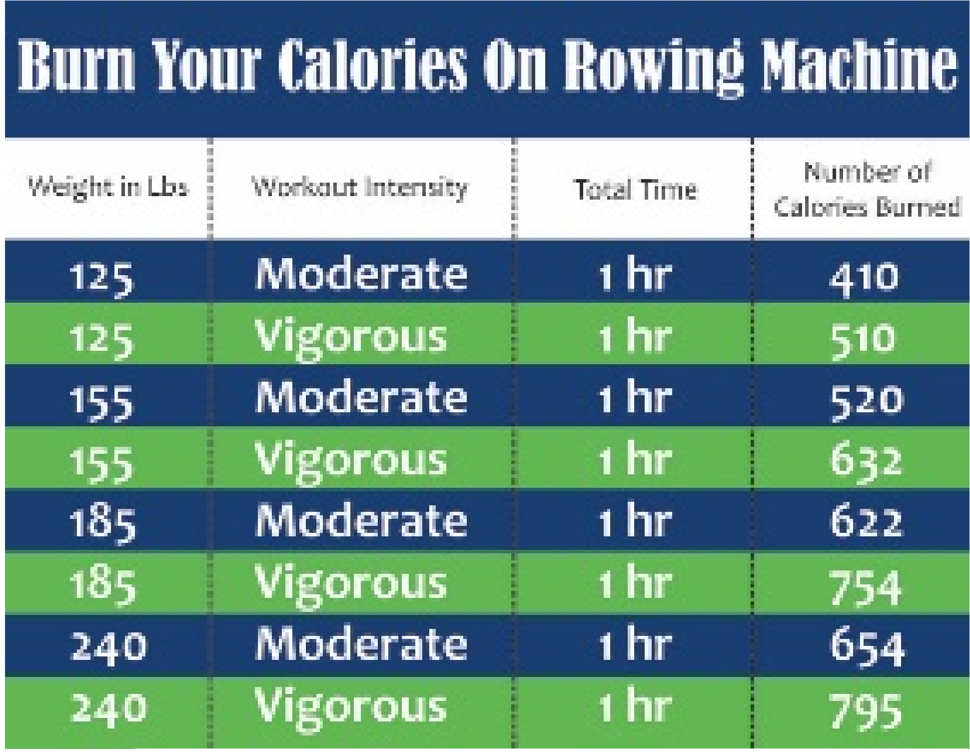
Calories burned per hour on average for a 160 pound person

Very little (50-150 calories/hour)		Significant (300-500 calories/hour)	
Sleeping	60	Hiking	360
Sitting, eating, handwork	90	Aerobics, general	420
Standing	100	Bicycling, light-moderate	420-560
Driving	110	Tennis	470
Housework, officework	140	Weight lifting	520

Moderate (150-300 calories/hour)		Extreme (500+ calories/hour)	
Walking, slow pace	180	Basketball	600
Light dancing	220	Moderate dancing	600
Golfing	250	Swimming	620
Yoga	280	Jogging, 6 MPH	700
Walking, moderate-fast	250-320	Running, >10 MPH	900+

http://Joshuakeith.net Jkweath@gmail.com

https://www.therowingmachinereview.com/wp-content/uploads/2016/07/Best-rowing-machine-reviews-03-1.jpg



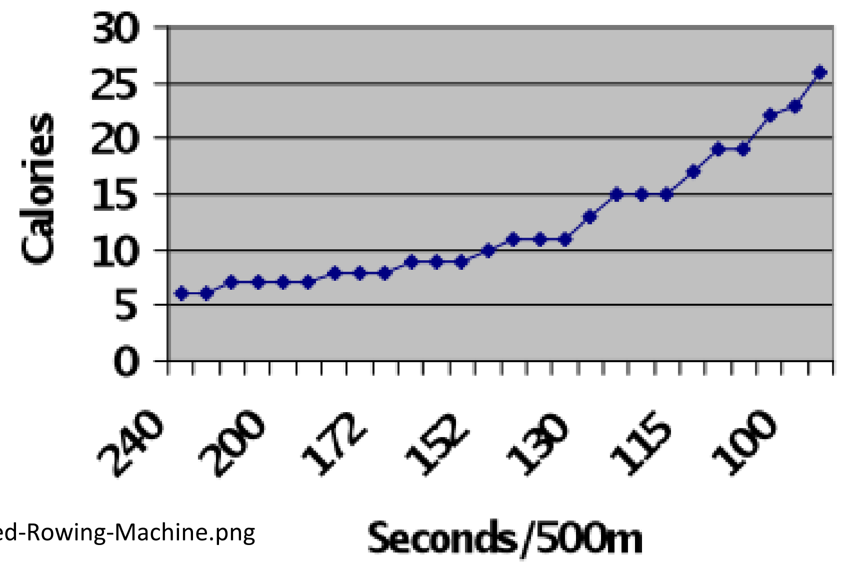
Burn Your Calories On Rowing Machine

Weight in Lbs	Workout Intensity	Total Time	Number of Calories Burned
125	Moderate	1 hr	410
125	Vigorous	1 hr	510
155	Moderate	1 hr	520
155	Vigorous	1 hr	632
185	Moderate	1 hr	622
185	Vigorous	1 hr	754
240	Moderate	1 hr	654
240	Vigorous	1 hr	795

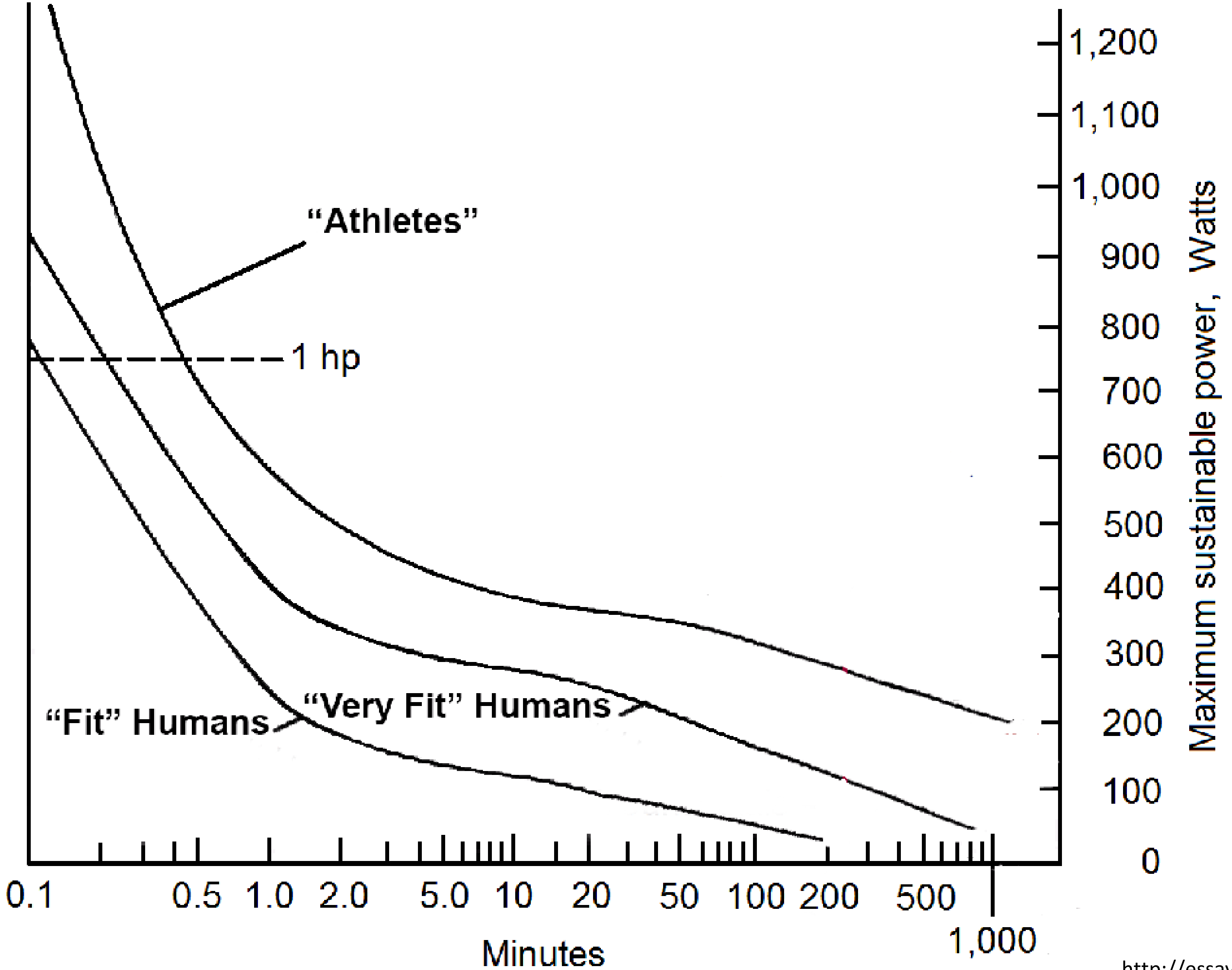
Men use the following formula:
Calories Burned = [(Age x 0.2017) – (Weight x 0.09036) + (Heart Rate x 0.6309) – 55.0969] x Time / 4.184.

Women use the following formula:
Calories Burned = [(Age x 0.074) – (Weight x 0.05741) + (Heart Rate x 0.4472) – 20.4022] x Time / 4.184.

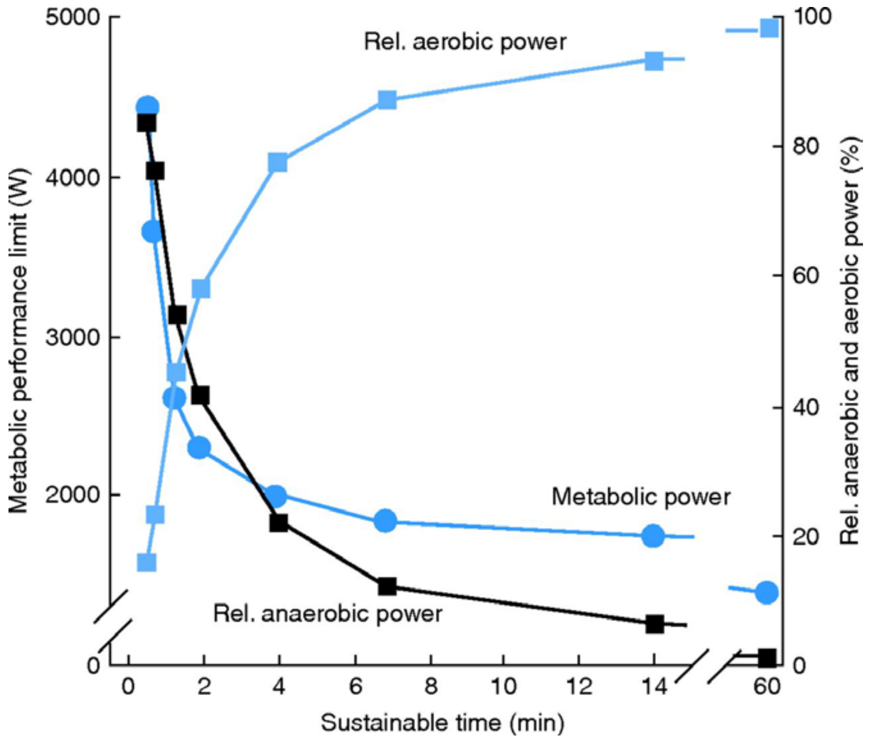
Calories Per Minute



http://www.rowingmachineking.com/wp-content/uploads/2015/06/Calories-Burned-Rowing-Machine.png



http://www.soltechdesigns.com/windslope/

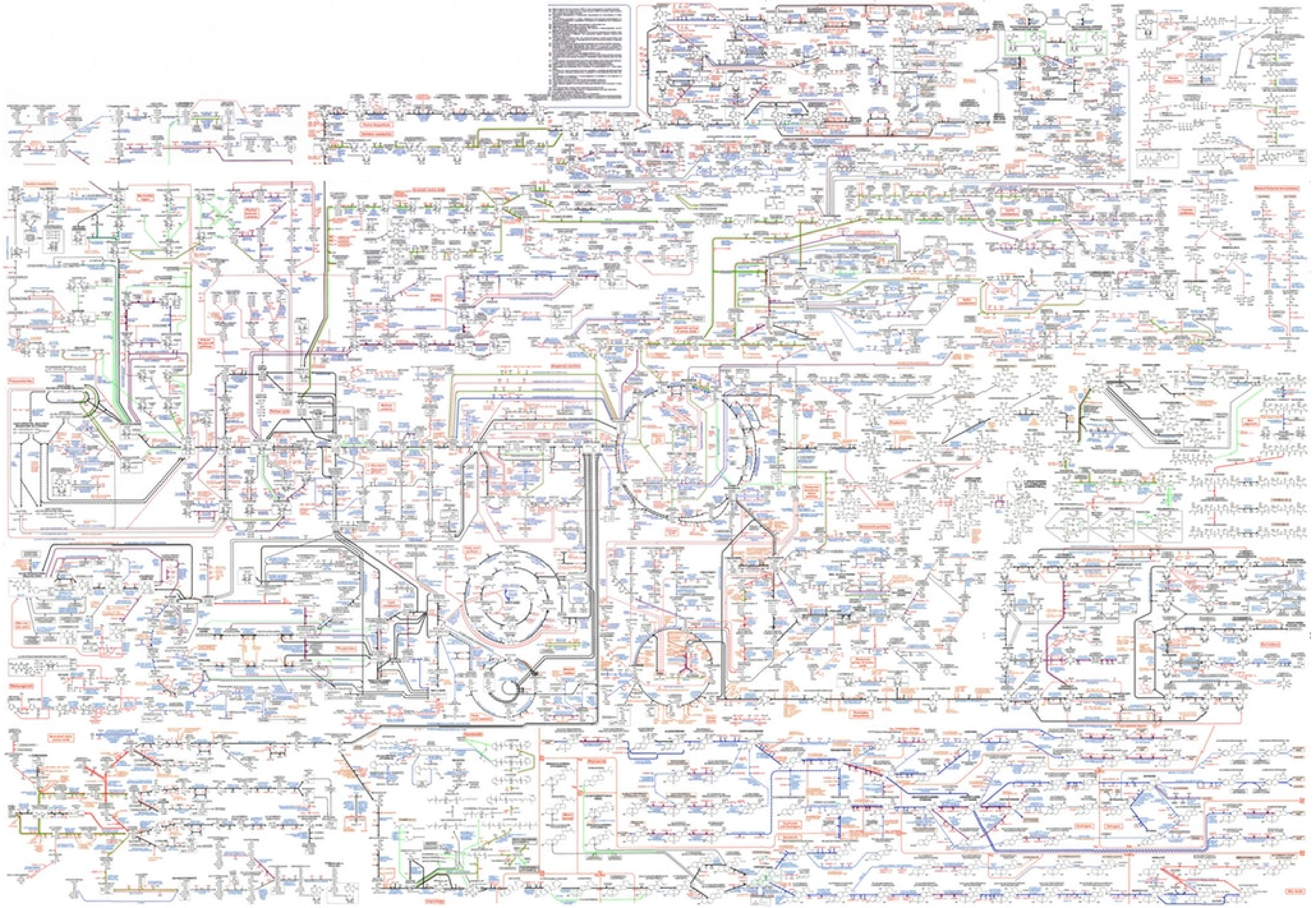


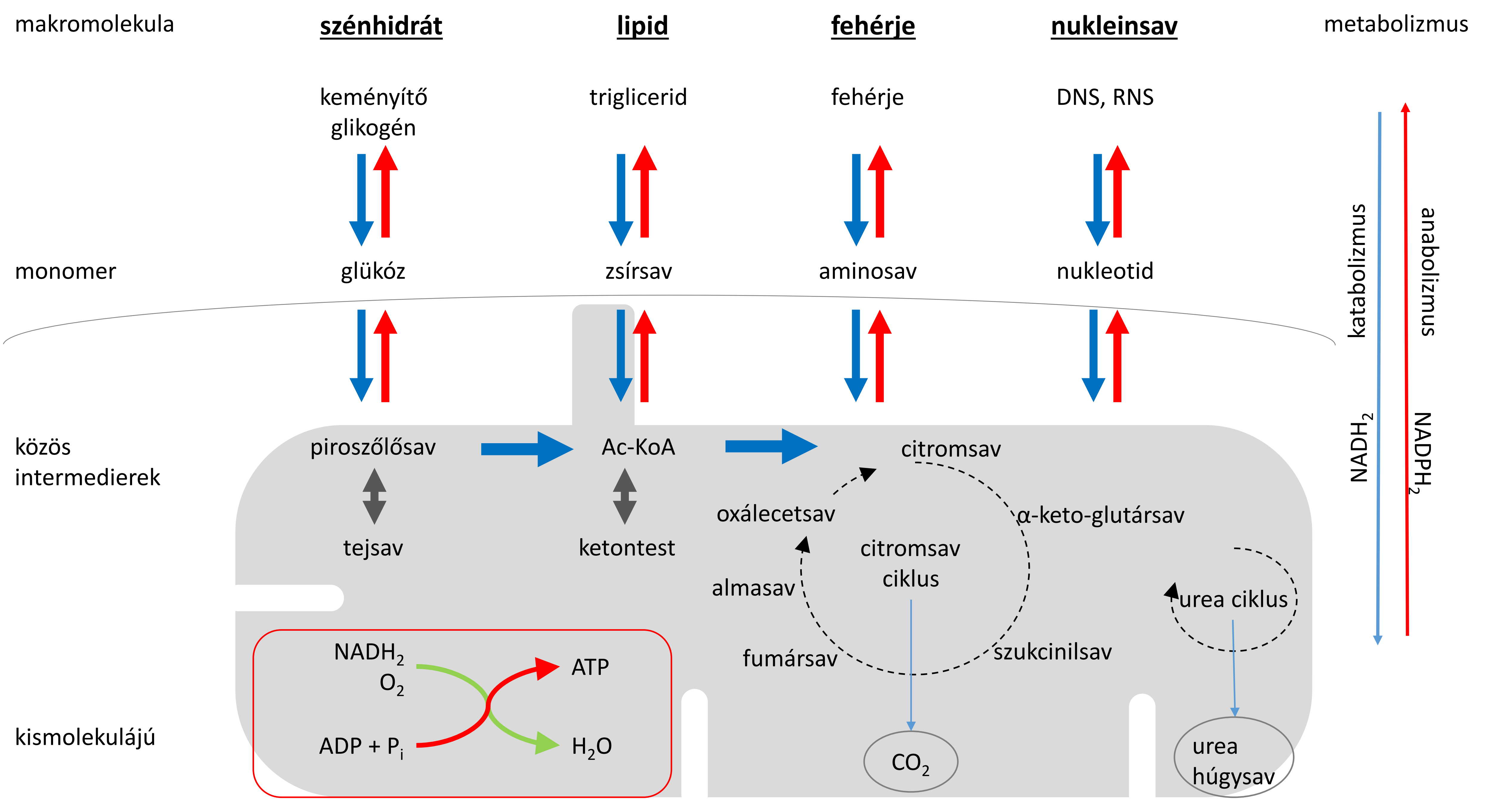
http://essays.biochemistry.org/content/ppebio/44/11/F3.large.jpg

Energy expenditure (calories/minute) = .0175 x MET (from table) x weight (in kilograms)

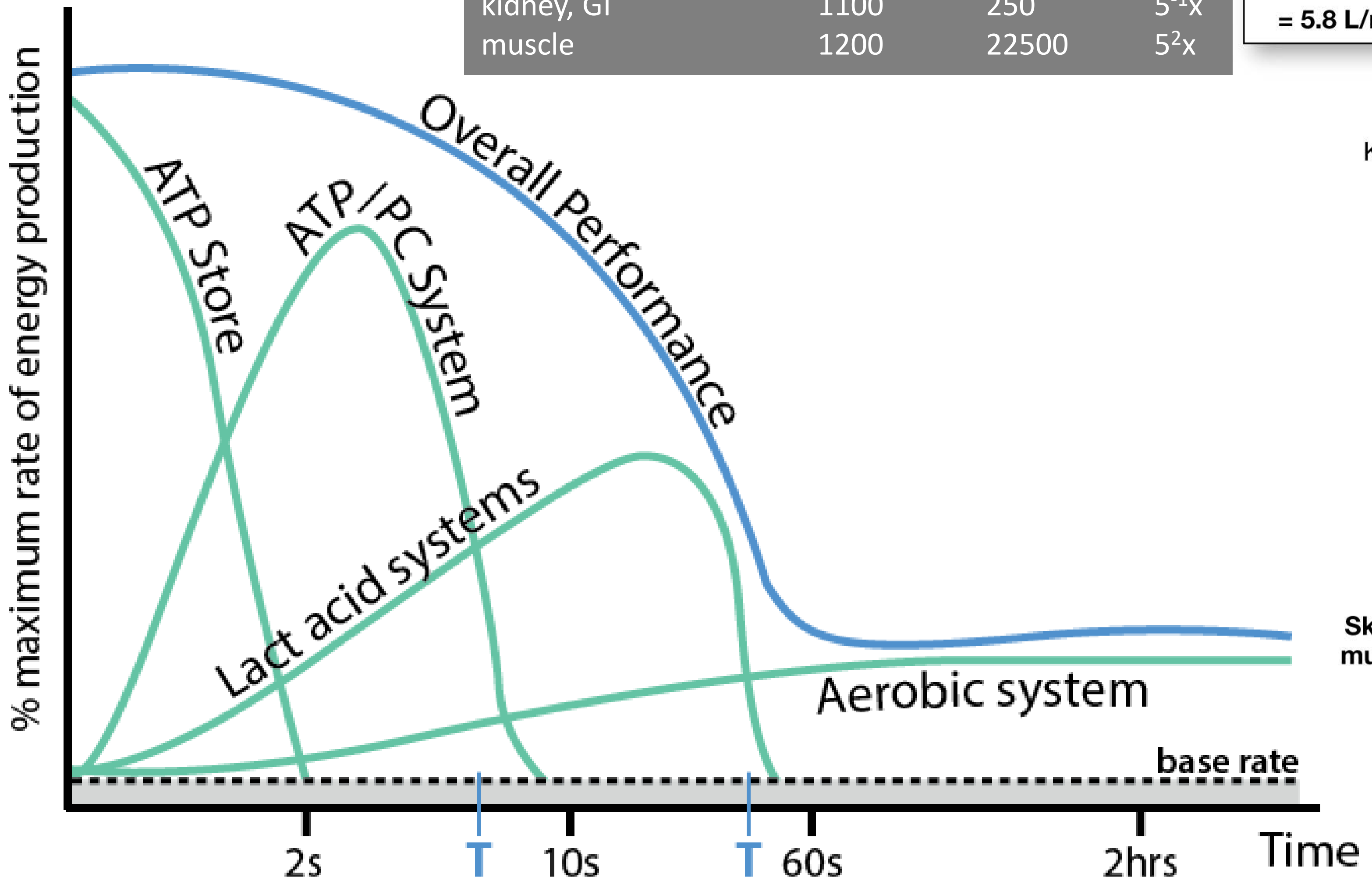
- 1 MET = metabolic equivalent = A unit used to estimate the metabolic cost oxygen consumption of physical activity = 3.6 ml O2/kg/min

METS	Activity	Description
1.0	Sitting	resting metabolic rate
4.0	Bicycling	<10 mph, general leisure
6.0	Bicycling	10-11.9 mph, leisure, slow, light effort
8.0	Bicycling	12-13.9 mph, leisure, moderate effort
10.0	Bicycling	14-15.9 mph, racing, fast, vigorous effort
12.0	Bicycling	16-19 mph, racing/not drafting or >19 mph drafting, very fast
16.0	Bicycling	>20 mph, racing, not drafting
3.0	Cycling (stationary)	50 watts, very light effort
5.5	Cycling (stationary)	100 watts, light effort
7.0	Cycling (stationary)	150 watts, moderate effort
10.5	Cycling (stationary)	200 watts, vigorous effort
12.5	Cycling (stationary)	250 watts, very vigorous effort
4.5	Calisthenics	home exercise, light or moderate effort
8.0	Calisthenics	vigorous effort (pushups, pullups, situps)
6.0	Dancing	aerobic, ballet or modern
5.0	Dancing	low impact aerobic
7.0	Dancing	high impact aerobic
1.0	Inactivity	Sitting quietly, watching t.v., reading, talking on phone, riding in a car
1.2	Inactivity	Standing quietly
8.0	Running	5 mph (12 min mile)
9.0	Running	5.2 mph (11.5 min mile)
10.0	Running	6 mph (10 min mile)
11.0	Running	6.7 mph (9 min mile)
11.5	Running	7 mph (8.5 min mile)
12.5	Running	7.5 mph (8 min mile)
13.5	Running	8 mph (7.5 min mile)
14.0	Running	8.6 mph (7 min mile)
15.0	Running	9 mph (6.5 min mile)
16.0	Running	10 mph (6 min mile)
18.0	Running	10.9 mph (5.5 min mile)
15.0	Running	Running stairs
8.5	Rowing machine	150 watts, vigorous effort
12.0	Rowing machine	200 watts, very vigorous effort

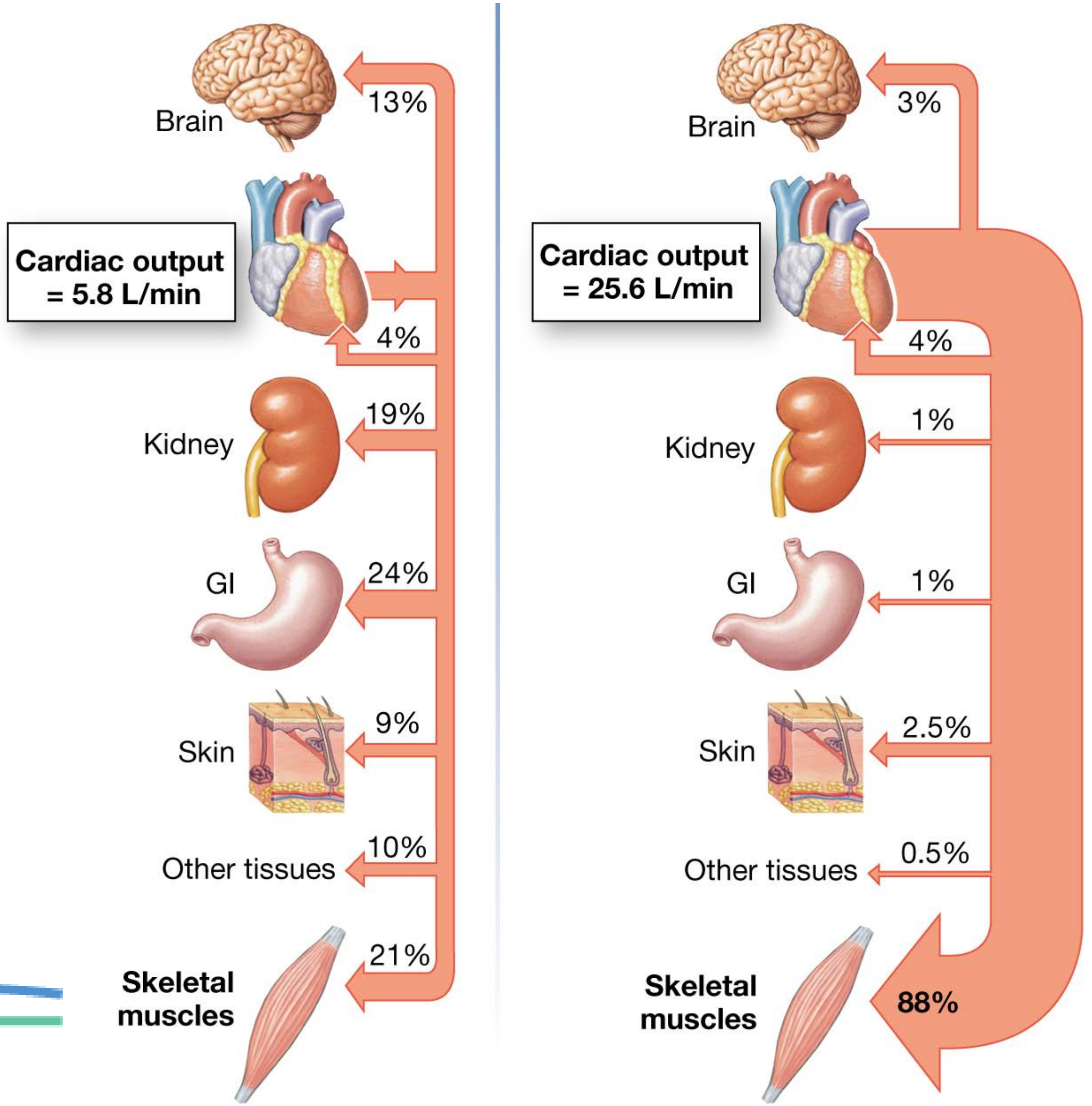


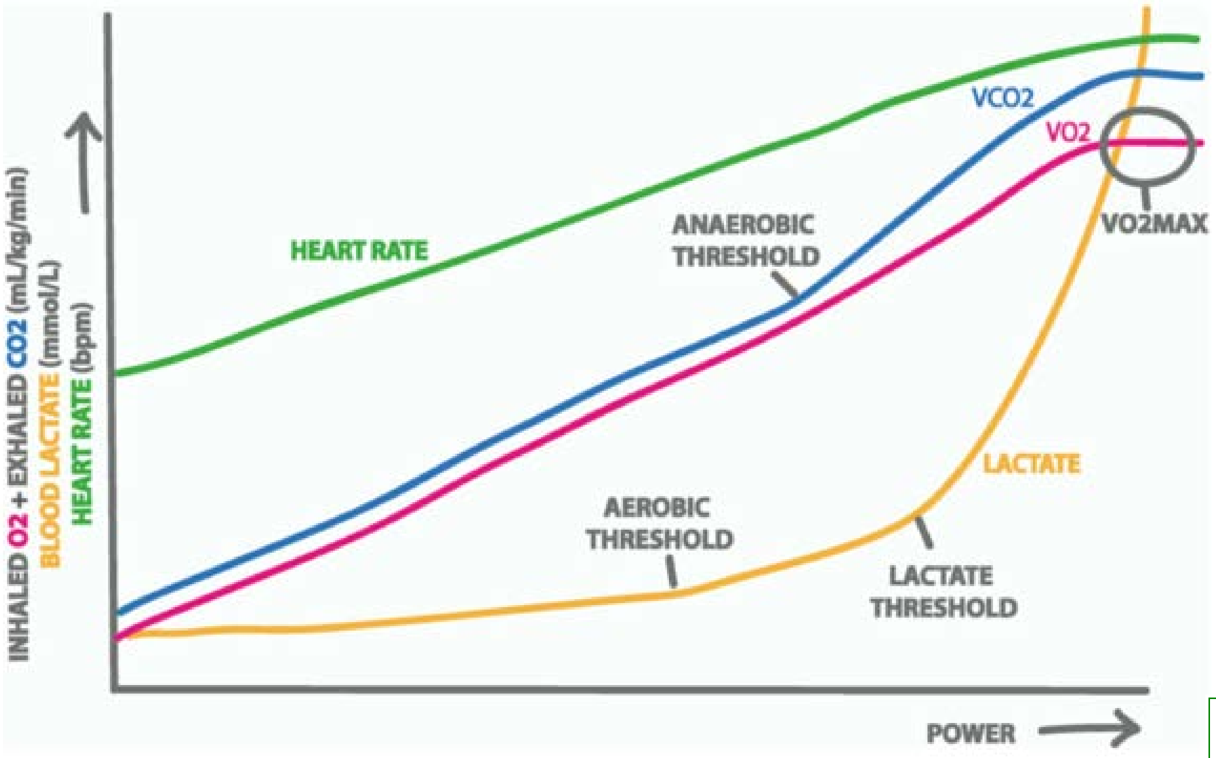

makromolekula
szénhidrát
lipid
fehérje
nukleinsav
metabolizmus
keményítő
glikogén
triglicerid
fehérje
DNS, RNS
katabolizmus
anabolizmus
monomer
glükóz
zsírsav
aminosav
nukleotid
közös
intermedierek
piroszőlősav
Ac-KoA
citromsav
tejsav
ketontest
oxálecetsav
α-keto-glutársav
citromsav
ciklus
almasav
urea ciklus
fumársav
szukcinilsav
$NADH_2$
$NADPH_2$
$NADH_2$
O_2
ATP
ADP + P_i
H_2O
CO_2
kismolekulájú
urea
húgysav

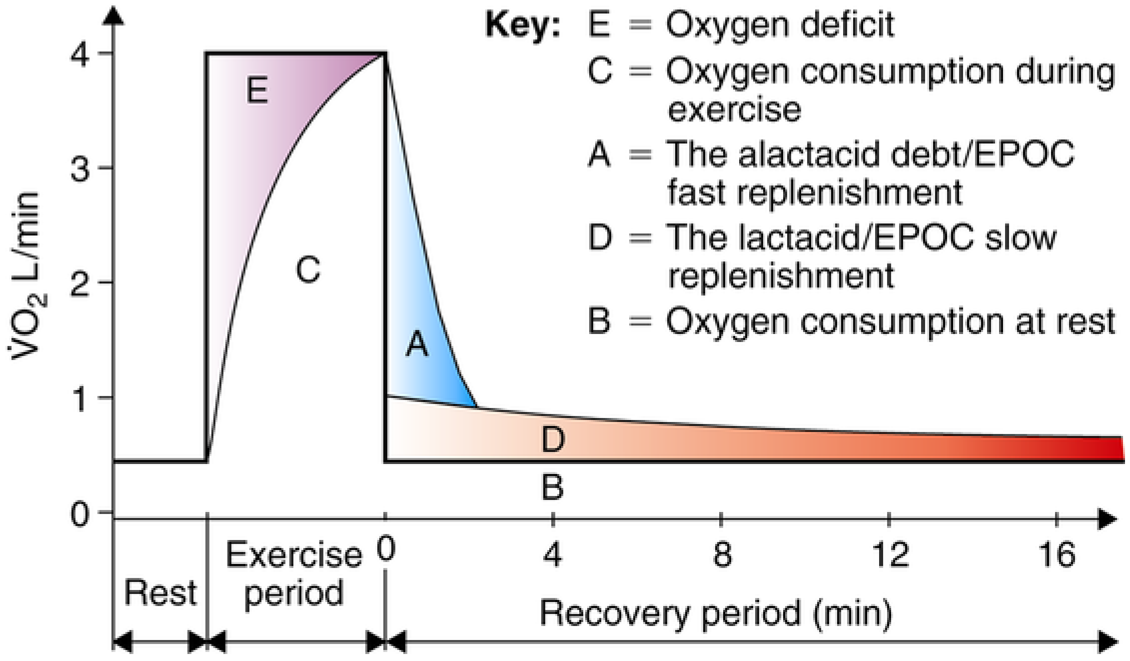
BLOOD flow (mL/min)	rest	exercise	
total	5800	25600	5^0x
pulse	72	180	2,5x
stroke volume	50 (80)	120 (200)	2x
brain	750	760	5^0x
heart	230	1050	5^1x
kidney, GI	1100	250	5^{-1}x
muscle	1200	22500	5^2x



T = Threshold point

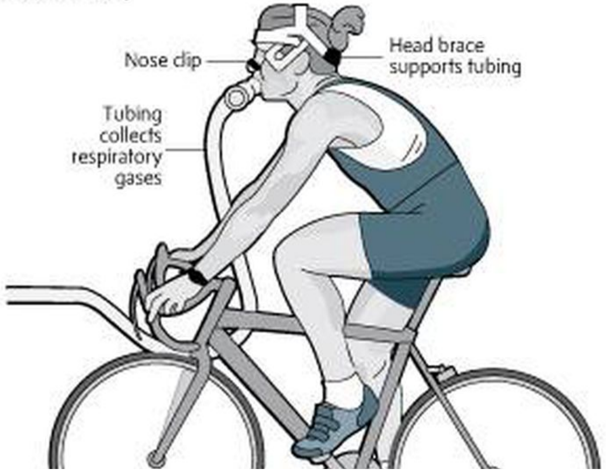






VO_2max: How it works

The VO_2max test is a progressive exercise test that starts at an easy pace, gradually accelerates and finishes at "voluntary exhaustion" after 10 to 12 minutes. It's typically performed on a treadmill or exercise bike, with tubing attached to your head that measures all the gases going in and out of your mouth. (Your nose is plugged for the duration.)



HOW DO YOU STACK UP?
VO_2max (ml/min/kg)

* AND BETTER TRAINING FOR DISTANCE RUNNERS

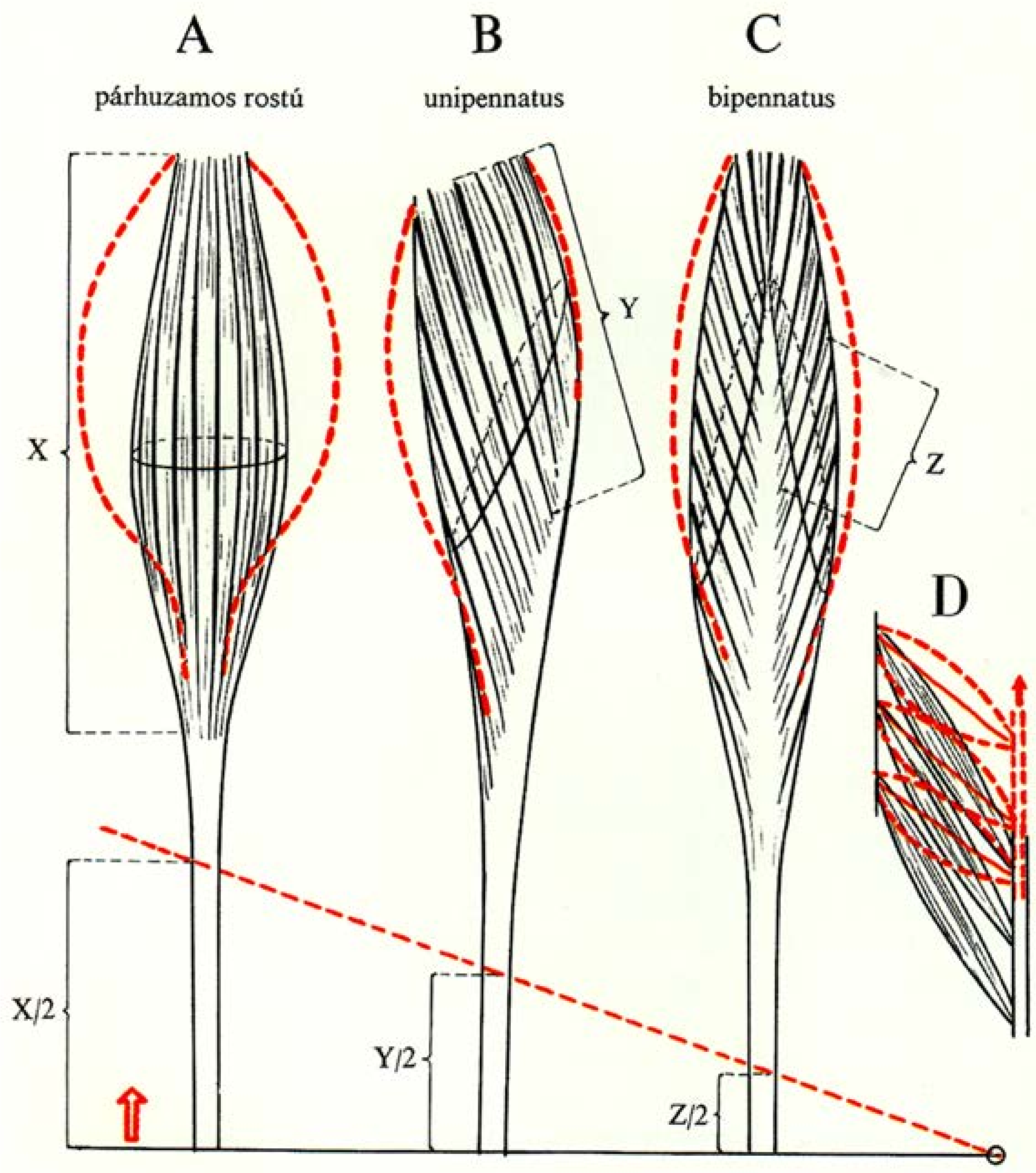
VO2max ($mL \cdot kg^{-1} \cdot min^{-1}$) Classifications for Women

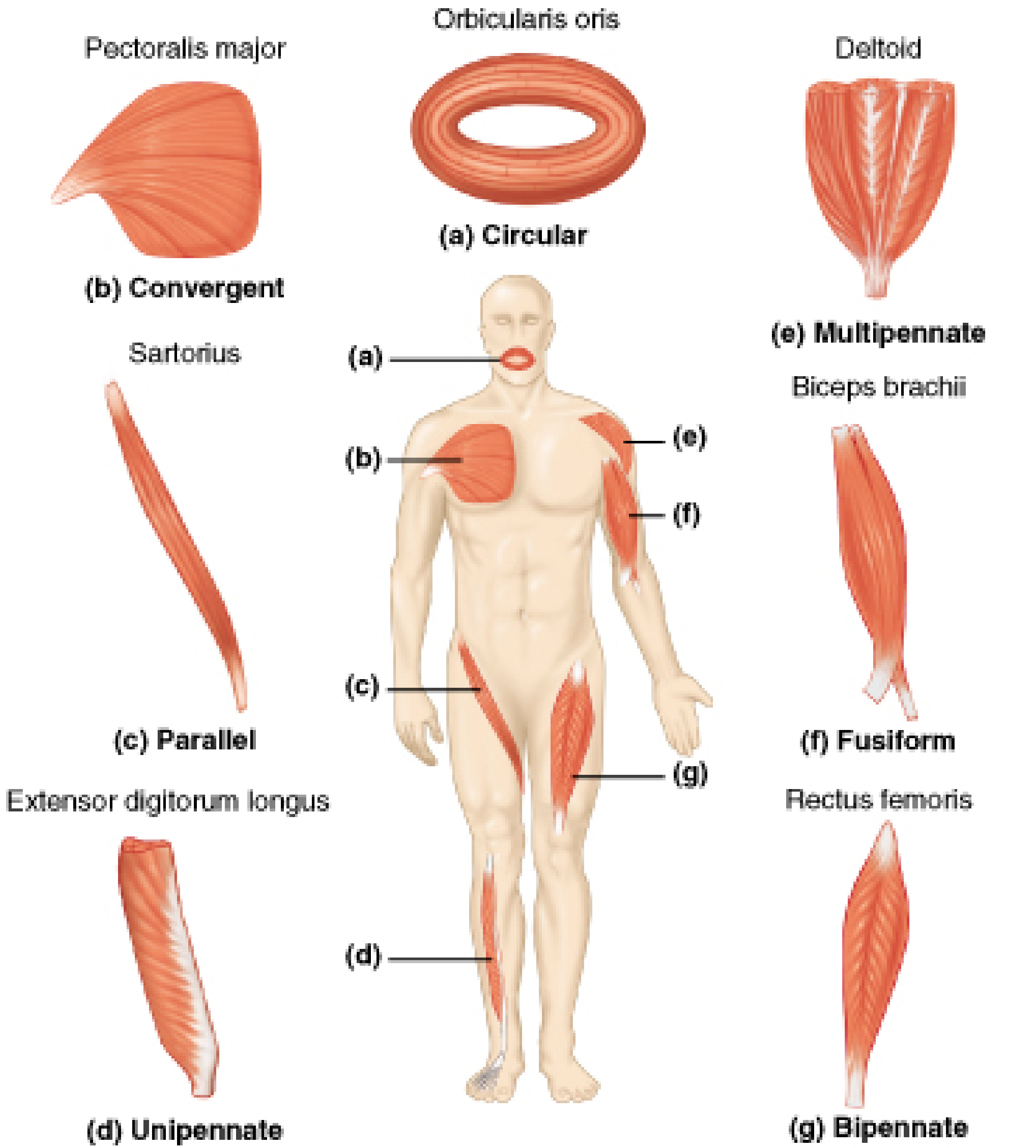
Age (years)	Poor	Fair	Good	Excellent	Superior
20 - 29	≤ 35	36 - 39	40 - 43	44 - 49	50+
30 - 39	≤ 33	34 - 36	37 - 40	41 - 45	46+
40 - 49	≤ 31	32 - 34	35 - 38	39 - 44	45+
50 - 59	≤ 24	25 - 28	29 - 30	31 - 34	35+
60 - 69	≤ 25	26 - 28	29 - 31	32 - 35	36+
70 - 79	≤ 23	24 - 26	27 - 29	30 - 35	36+

VO2max ($mL \cdot kg^{-1} \cdot min^{-1}$) Classifications for Men

Age (years)	Poor	Fair	Good	Excellent	Superior
20 - 29	≤ 41	42 - 45	46 - 50	51 - 55	56+
30 - 39	≤ 40	41 - 43	44 - 47	48 - 53	54+
40 - 49	≤ 37	38 - 41	42 - 45	46 - 52	53+
50 - 59	≤ 34	35 - 37	38 - 42	43 - 49	50+
60 - 69	≤ 30	31 - 34	35 - 38	39 - 45	46+
70 - 79	≤ 27	28 - 30	31 - 35	36 - 41	42+

- A maximum rate at which an individual can consume O2 during maximal exertion.
- Expressed as the maximum volume of oxygen consumed/min
- **Absolute: litres per min (L/min)**
- **Relative: milliliters per kilogram per minute (ml/kg/min)**
- 1 MET = metabolic equivalent = A unit used to estimate the metabolic cost oxygen consumption of physical activity = 3.6 ml O2/kg/min


A
párhuzamos rostú
B
unipennatus
C
bipennatus
D
X
Y
Z
X/2
Y/2
Z/2

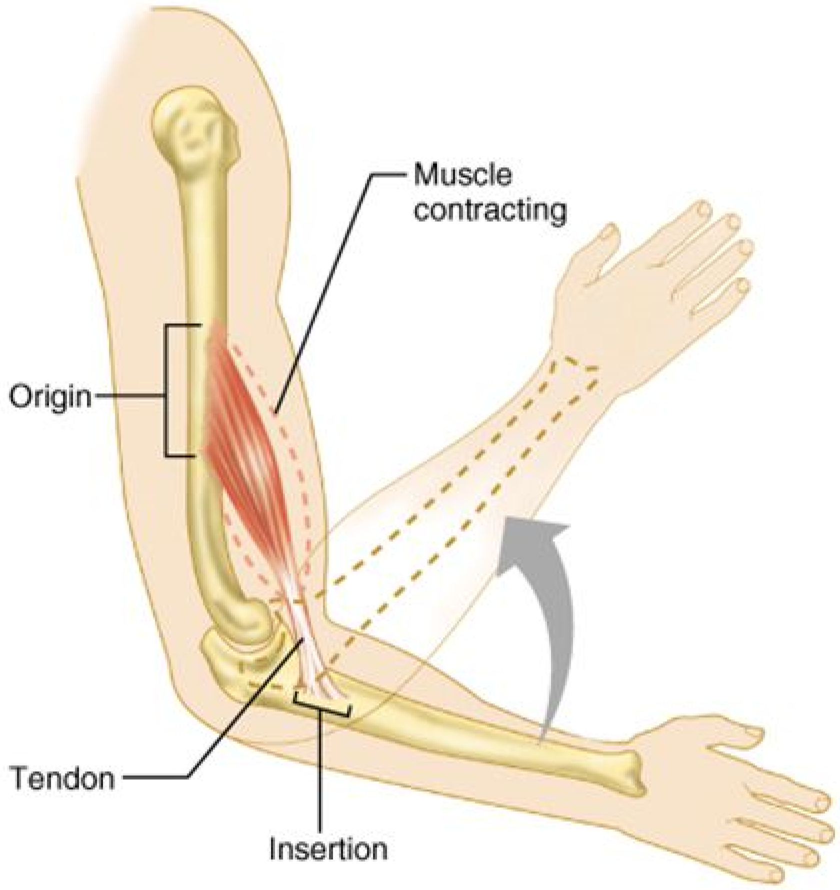

Pectoralis major
Orbicularis oris
Deltoid
(a) Circular
(b) Convergent
(e) Multipennate
Sartorius
(a)
(b)
(e)
(f)
Biceps brachii
(c)
(g)
(d)
(c) Parallel
(f) Fusiform
Extensor digitorum longus
Rectus femoris
(d) Unipennate
(g) Bipennate

Basic Features of a Skeletal Muscle

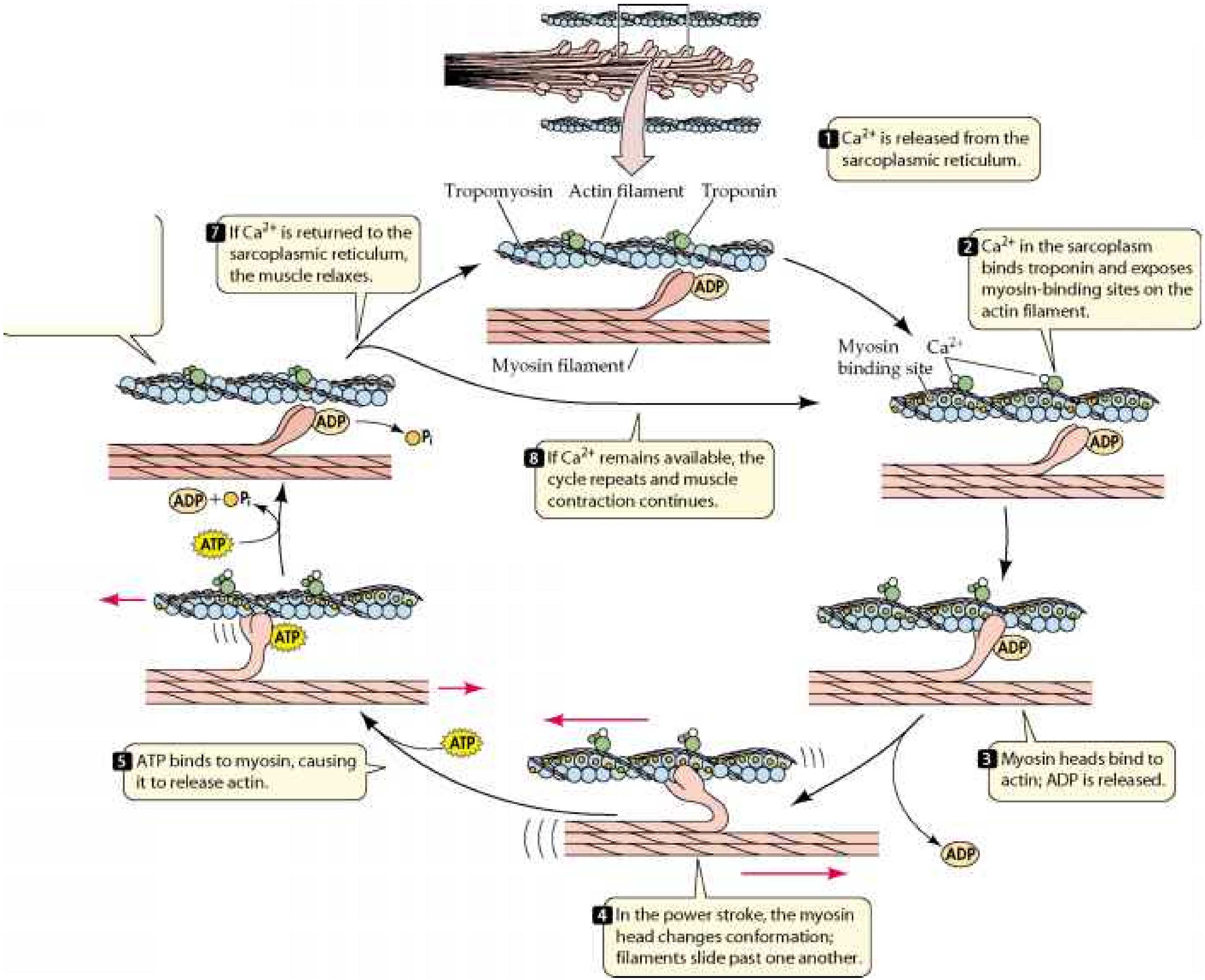
- Most skeletal muscles span joints and are attached to bones in at least two places

- When a muscle contracts, the movable bone (insertion) moves toward the immovable/less movable bone (origin)

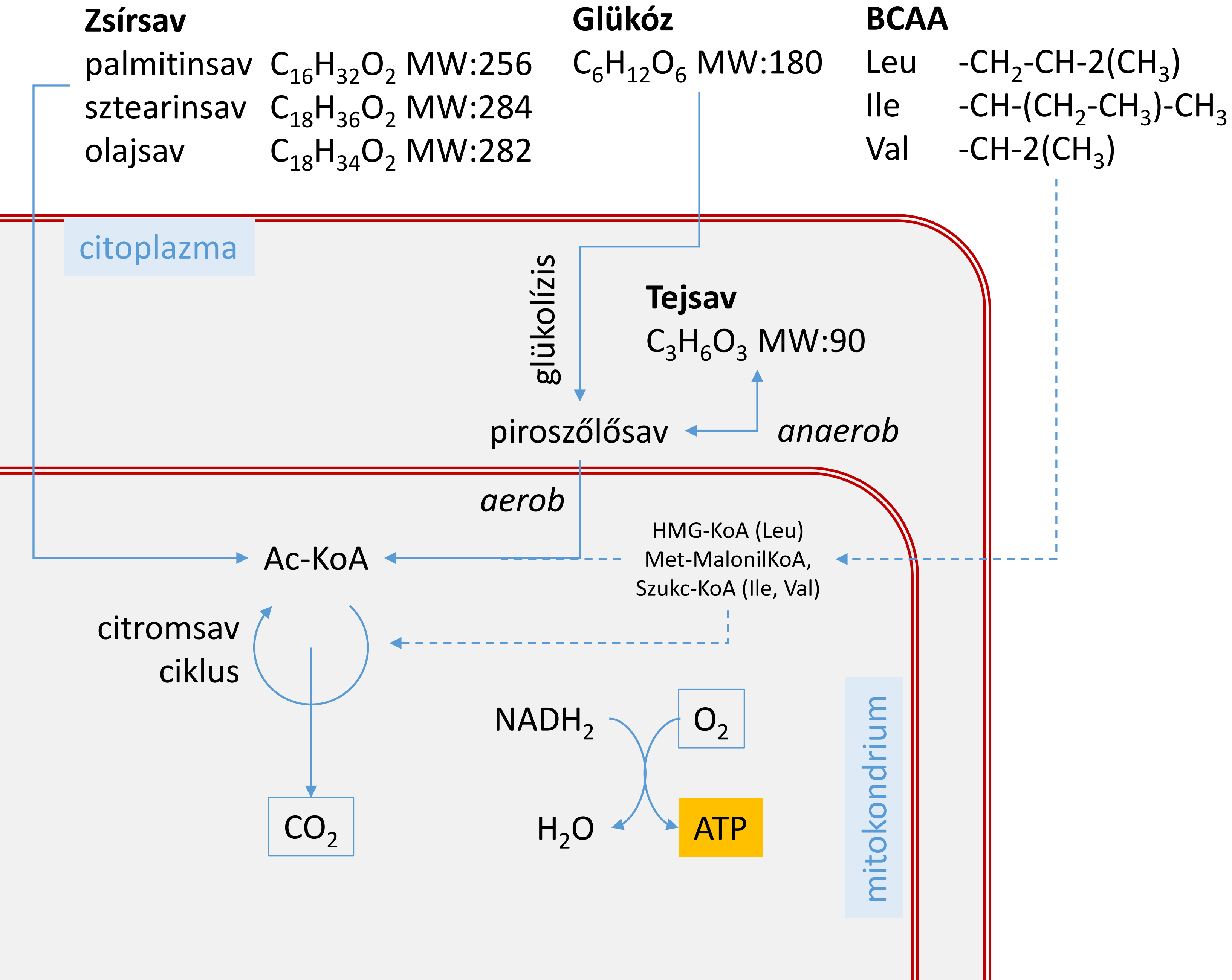
- Attachments may be direct or indirect (anchored by tendons or an aponeurosis; more common)



Slow fibers (Type I) (oxidative)	Fast fibers (Type II)	
	Fast oxidative (IIa)	Fast glycolytic (IIb)
Source of ATP: Oxidative	Source of ATP: Oxidative	Source of ATP: Glycolysis
Contraction velocity: Slow	Contraction velocity: Fast	Contraction velocity: Fast
Mitochondria: Many	Mitochondria: Many	Mitochondria: Few
Capillaries: Many	Capillaries: Many	Capillaries: Few
Myoglobin content: High (red muscle)	Myoglobin content: High (red muscle)	Myoglobin content: Low (white muscle)
Glycolytic enzymes: Low	Glycolytic enzymes: Intermediate	Glycolytic enzymes: High



1 Ca^{2+} is released from the sarcoplasmic reticulum.
Tropomyosin
Actin filament
Troponin
ADP
Myosin filament
2 Ca^{2+} in the sarcoplasm binds troponin and exposes myosin-binding sites on the actin filament.
Myosin binding site
Ca^{2+}
ADP
ADP
3 Myosin heads bind to actin; ADP is released.
ADP
4 In the power stroke, the myosin head changes conformation; filaments slide past one another.
ATP
5 ATP binds to myosin, causing it to release actin.
ATP
ATP
ADP + P_i
ADP
P_i
7 If Ca^{2+} is returned to the sarcoplasmic reticulum, the muscle relaxes.
8 If Ca^{2+} remains available, the cycle repeats and muscle contraction continues.



ATP

glükóz	2
glükóz	(36)-38
palmitinsav	129
sztearinsav	147
olajsav	145

O_2

glükóz	0
glükóz	6
palmitinsav	23
sztearinsav	26
olajsav	25,5

CO_2/O_2 légzési hányados

	CO_2/O_2	O_2/CO_2
glükóz	6/6=1	1
palmitinsav	16/23=0,695	1,437
sztearinsav	18/26=0,692	1,444
olajsav	18/25,5=0,706	1,416

ATP/O_2

glükóz	!
glükóz	6,33
palmitinsav	5,61
sztearinsav	5,65
olajsav	5,69

ATP/mg

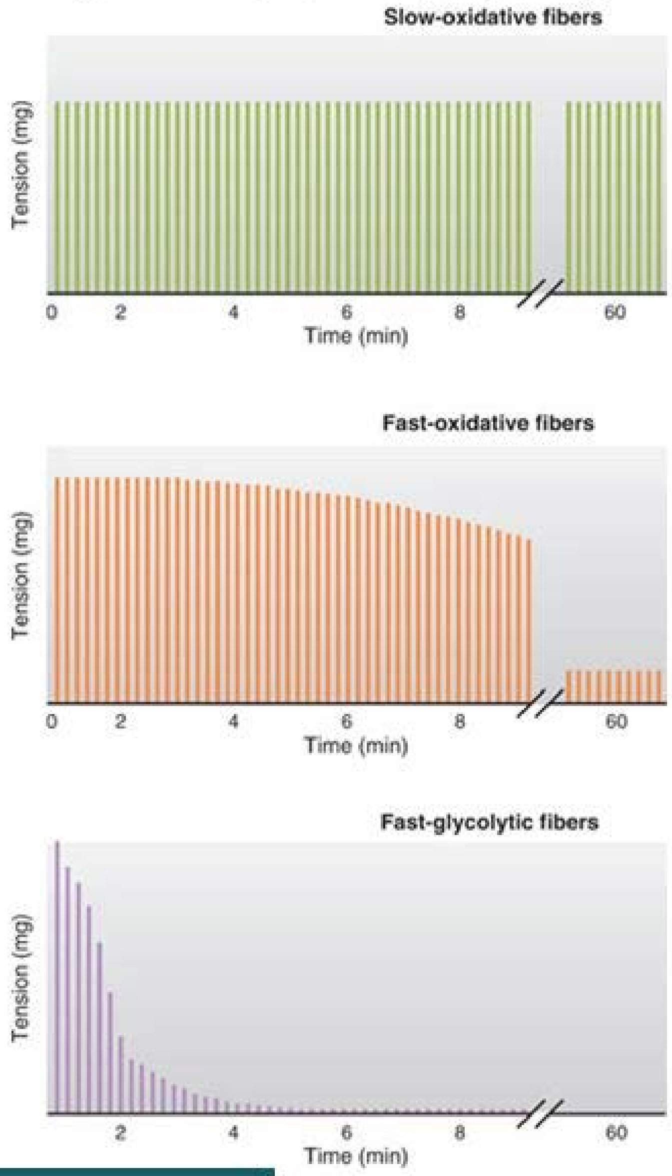
glükóz	11,1
glükóz	211
palmitinsav	504
sztearinsav	518
olajsav	514

3 major types of skeletal muscles

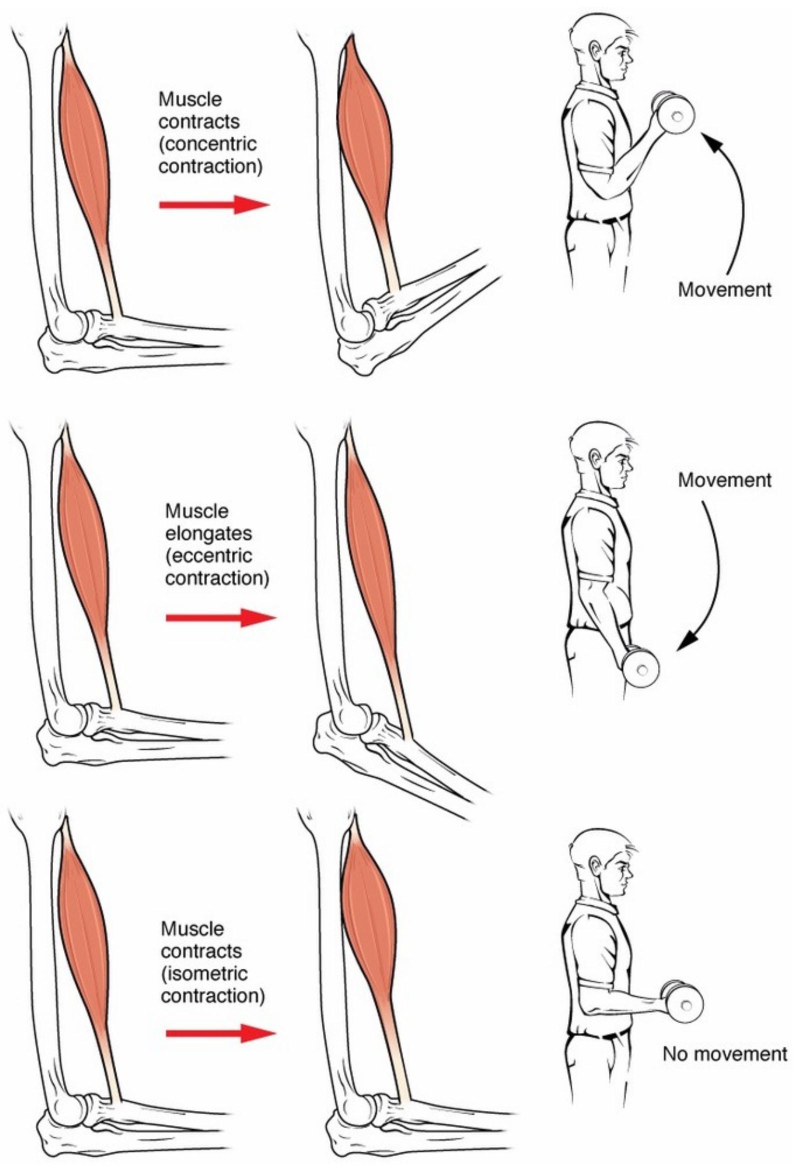
Slow-oxidative skeletal muscle responds well to repetitive stimulation without becoming fatigued; muscles of body posture are examples. Low myosin ATPase activities and high oxidative capacity.

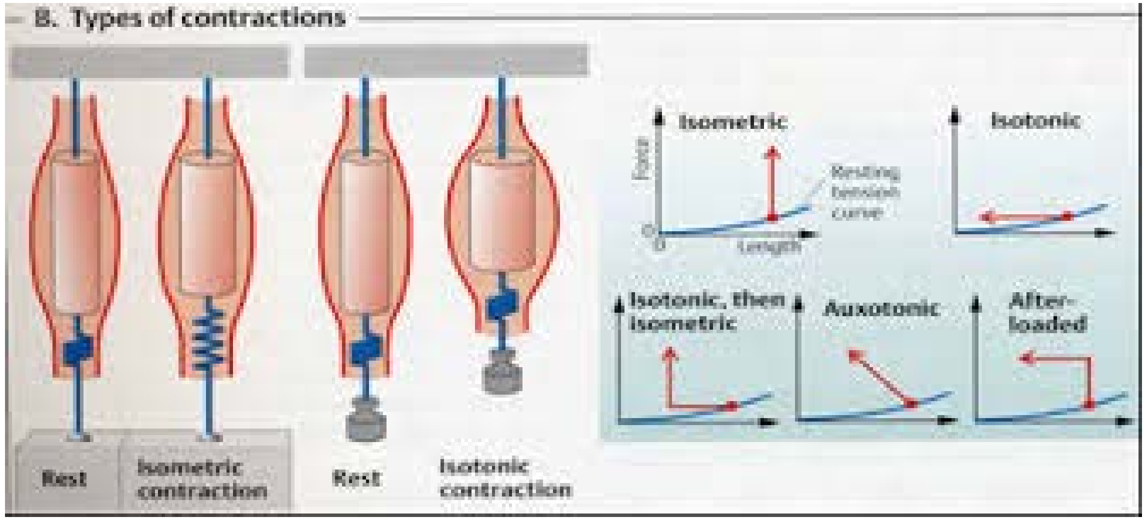
Fast-oxidative skeletal muscle responds quickly *and* to repetitive stimulation without becoming fatigued; muscles used in walking are examples. High myosin ATPase activities and high oxidative capacity.

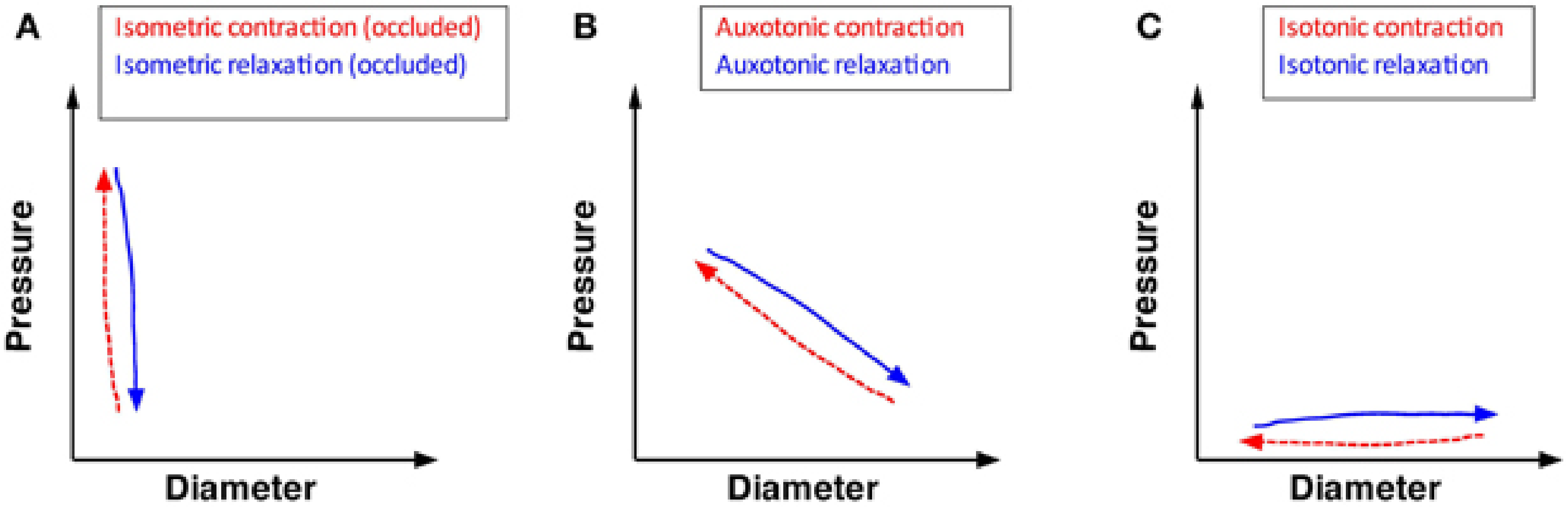
Fast-glycolytic skeletal muscle is used for quick bursts of strong activation, such as muscles used to jump or to run a short sprint. High myosin ATPase activities and high glycolytic capacity.

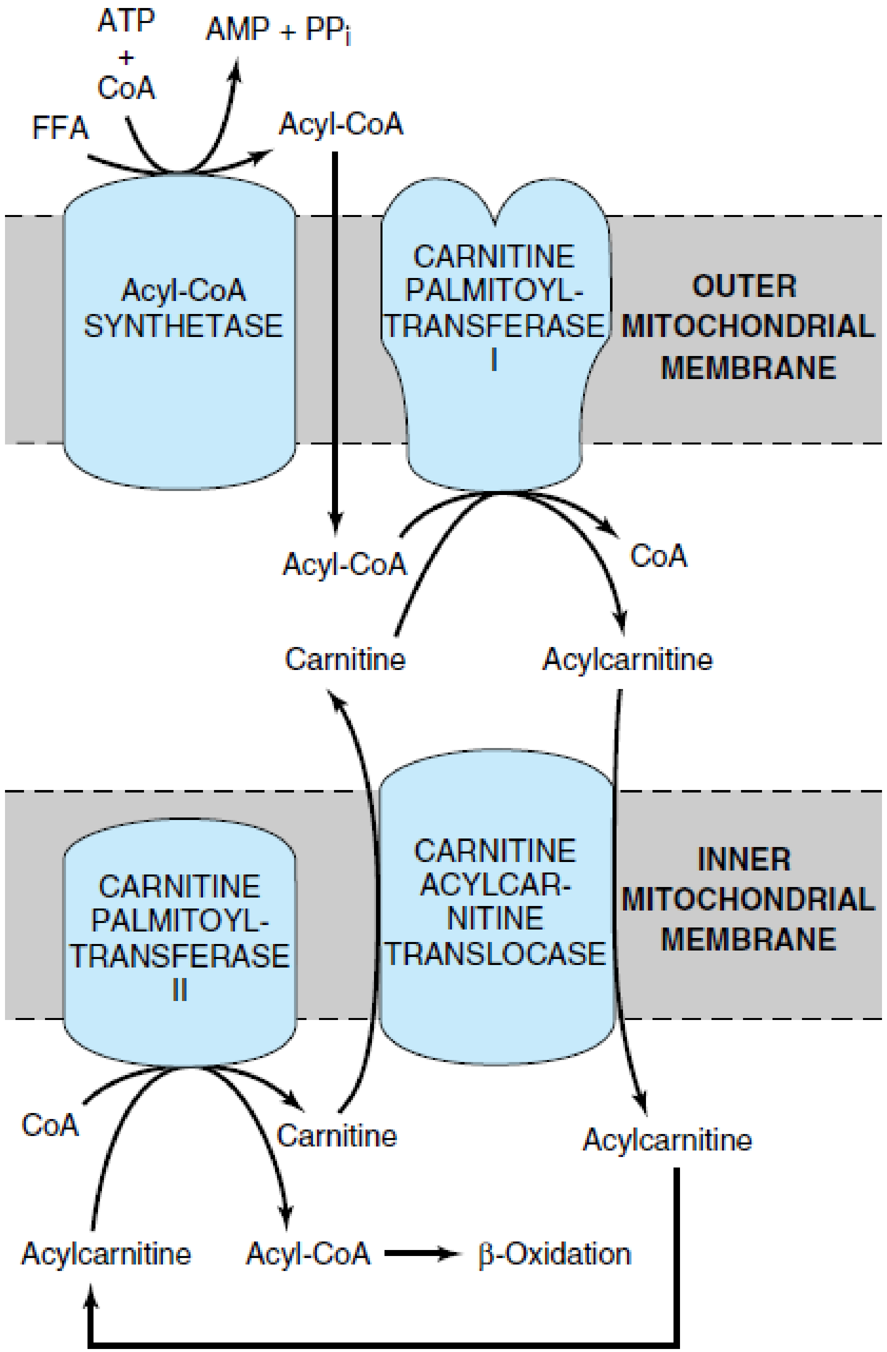


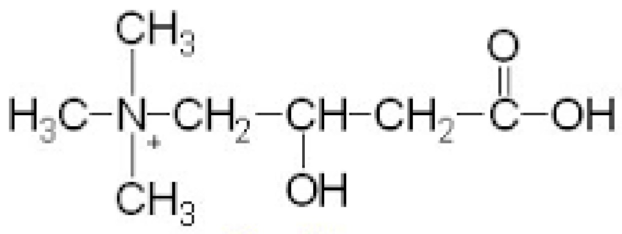
Most skeletal muscles include all three types.


Muscle contracts (concentric contraction)
Movement
Muscle elongates (eccentric contraction)
Movement
Muscle contracts (isometric contraction)
No movement


B. Types of contractions
Rest
Isometric contraction
Rest
Isotonic contraction
Isometric
Isotonic
Isotonic, then isometric
Auxotonic
After-loaded


A
Isometric contraction (occluded)
Isometric relaxation (occluded)
Pressure
Diameter
B
Auxotonic contraction
Auxotonic relaxation
Pressure
Diameter
C
Isotonic contraction
Isotonic relaxation
Pressure
Diameter





Harper's Biochemistry Figure 22–1. Role of carnitine in the transport of long-chain fatty acids through the inner mitochondrial membrane. Long-chain acyl-CoA cannot pass through the inner mitochondrial membrane, but its metabolic product, acylcarnitine, can.

1 serving | 16 oz. | 2x daily

Suggested Use: As a dietary supplement, take 1 scoop mixed into 16 oz of your favorite beverage 2 times daily. For best results, shake for 30 seconds in a shaker cup.

VEGETARIAN | ALLERGEN FREE | GLUTEN FREE | BSE/TSE FREE

ZERO
FILLERS | EXCIPIENTS

ABSOLUTELY NO
PROPRIETARY BLENDS
PROTEIN SPIKING
UNDER-DOSING
BANNED SUBSTANCES
HIDDEN INGREDIENTS

Warning: NOT INTENDED FOR USE BY PERSONS UNDER THE AGE OF 18. KEEP OUT OF THE REACH OF CHILDREN. If you are pregnant, breast feeding, have known medical conditions (including kidney or liver disease) or are taking prescription or OTC medication(s) consult with your health care practitioner before using this product.

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FULL LABEL DISCLOSURE ™

Made in the USA.
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NUTRABIO®

MUSCLE | GROWTH | RECOVERY

BCAA 5000

INSTANTIZED BRANCH CHAIN AMINO ACIDS

- NO FILLERS
- NO EXCIPIENTS
- NO ADDITIVES *(except flavoring)*

- Pharmaceutical Grade
- Supports Muscle Growth & Recovery ‡
- Leucine Isoleucine Valine 2:1:1 Ratio

TROPICAL FRUIT PUNCH

Natural & Artificial Flavoring
Dietary Supplement
Net Wt. 400 grams

MADE IN OUR GMP & FDA INSPECTED FACILITY

2.5G LEUCINE
1.25G ISOLEUCINE
1.25G VALINE

Supplement Facts

Serving size: 1 scoop (6.44 grams)
Servings per container: 63

	Amount Per Serving	% DV
L-Leucine	2.5 g	†
L-Isoleucine	1.25 g	†
L-Valine	1.25 g	†

† Daily value (DV) not established

Other Ingredients: Flavoring (natural & artificial watermelon flavoring 700 mg, citric acid 500 mg, sucralose 100 mg, beet powder 30 mg, acesulfame potassium 20 mg)

STORE IN A COOL DRY PLACE. SERVING SCOOP INCLUDED. MAY SETTLE TO THE BOTTOM DURING SHIPPING.)

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WITHOUT COMPROMISE SINCE 1996

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564 Lincoln Blvd., Middlesex, NJ 08846
www.nutrabio.com / info@nutrabio.com (732-748-8606)

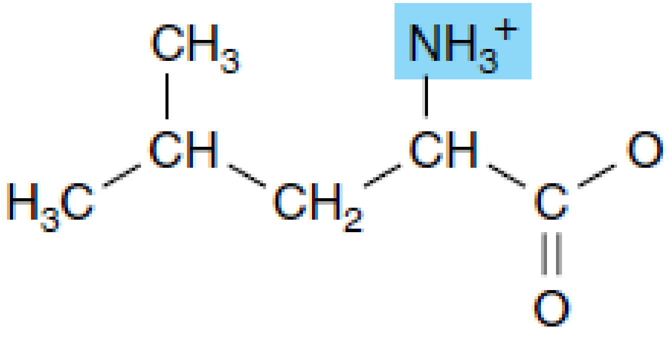
‡These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

MADE IN USA

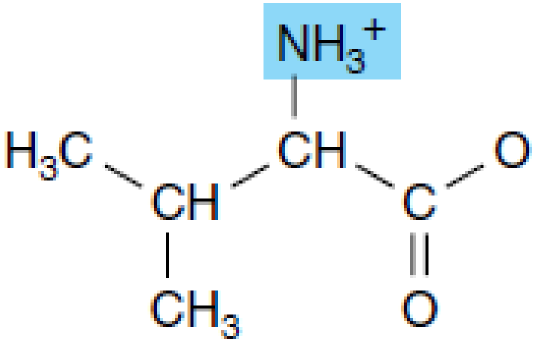
6 49908 52590 3

BCAA

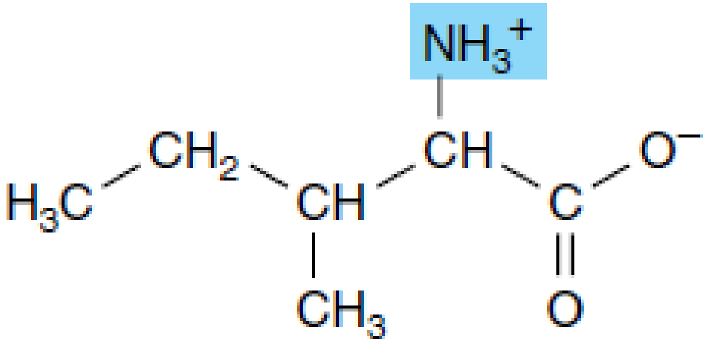
The catabolism of branched-chain amino acids
(leucine, valine, and isoleucine) presents many analogies to fatty acid catabolism.
Overall <1% in total energy need.



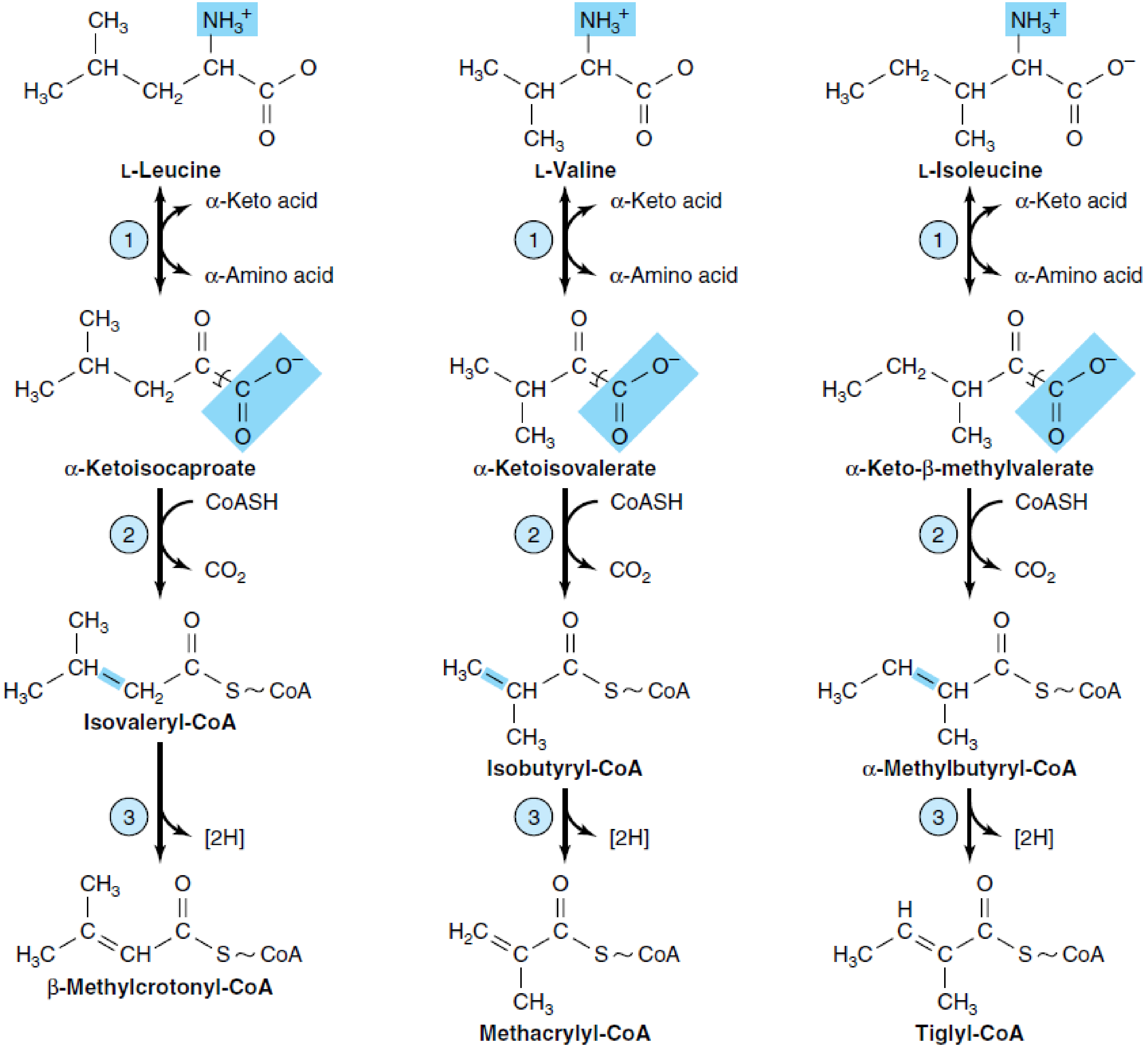
L-Leucine



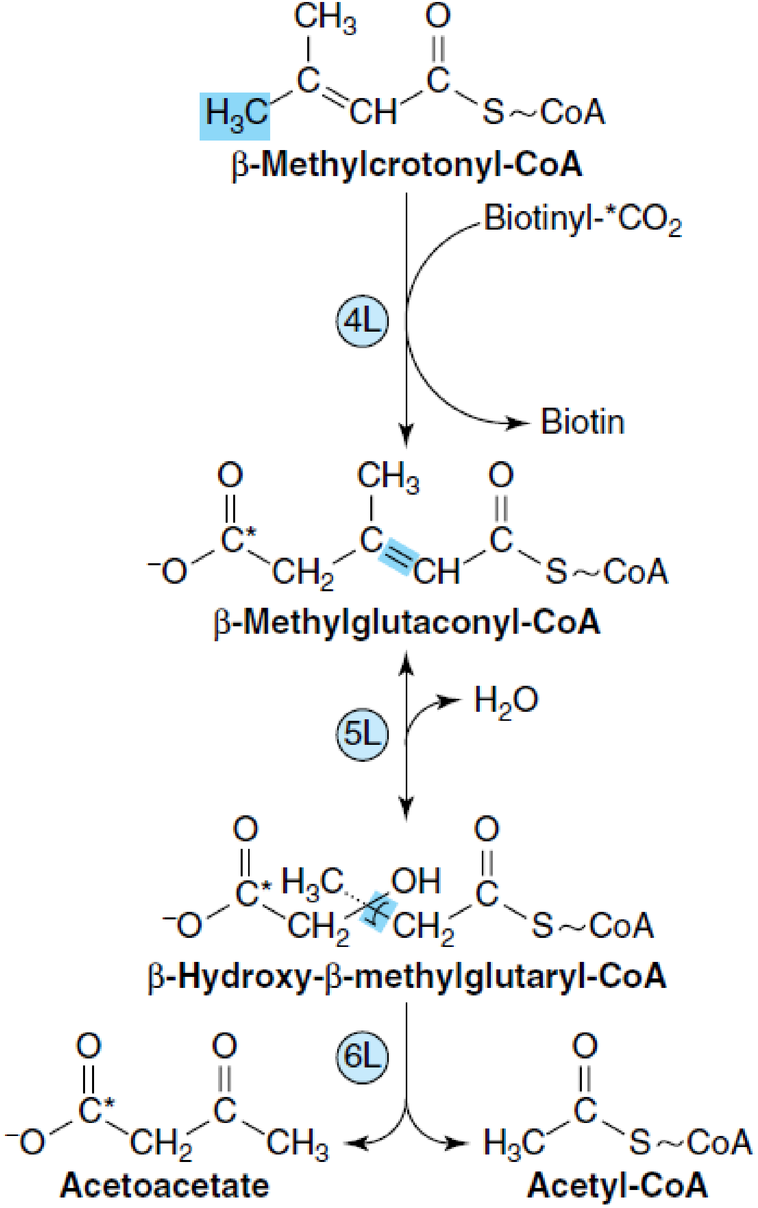
L-Valine



L-Isoleucine

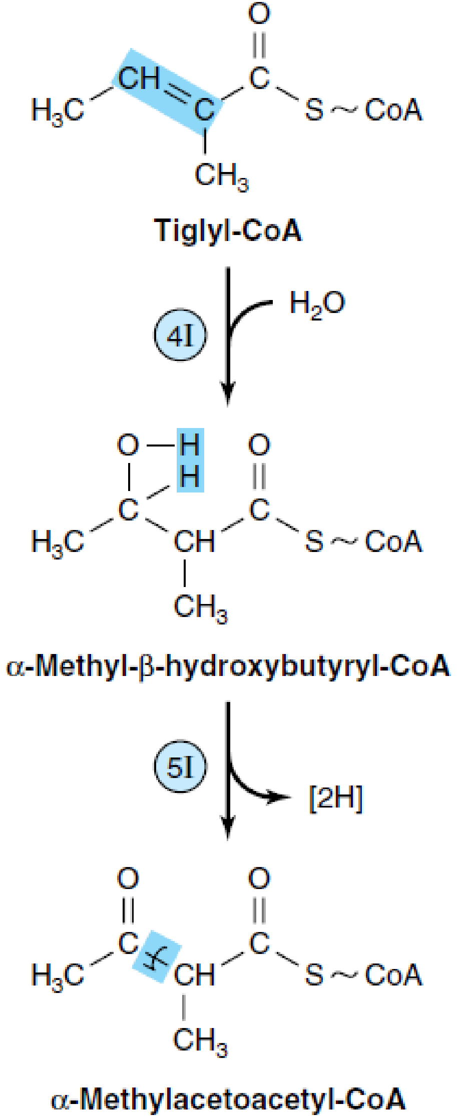


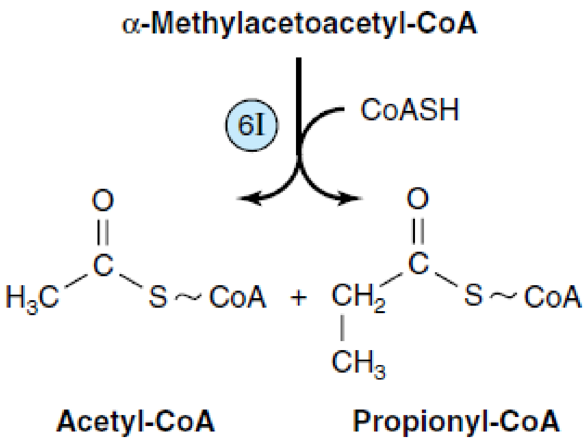
Harper's Biochemistry Figure 30–19. The analogous first three reactions in the catabolism of leucine, valine, and isoleucine. Note also the analogy of reactions 2 and 3 to reactions of the catabolism of fatty acids (see Figure 22–3). The analogy to fatty acid catabolism continues, as shown in subsequent figures.

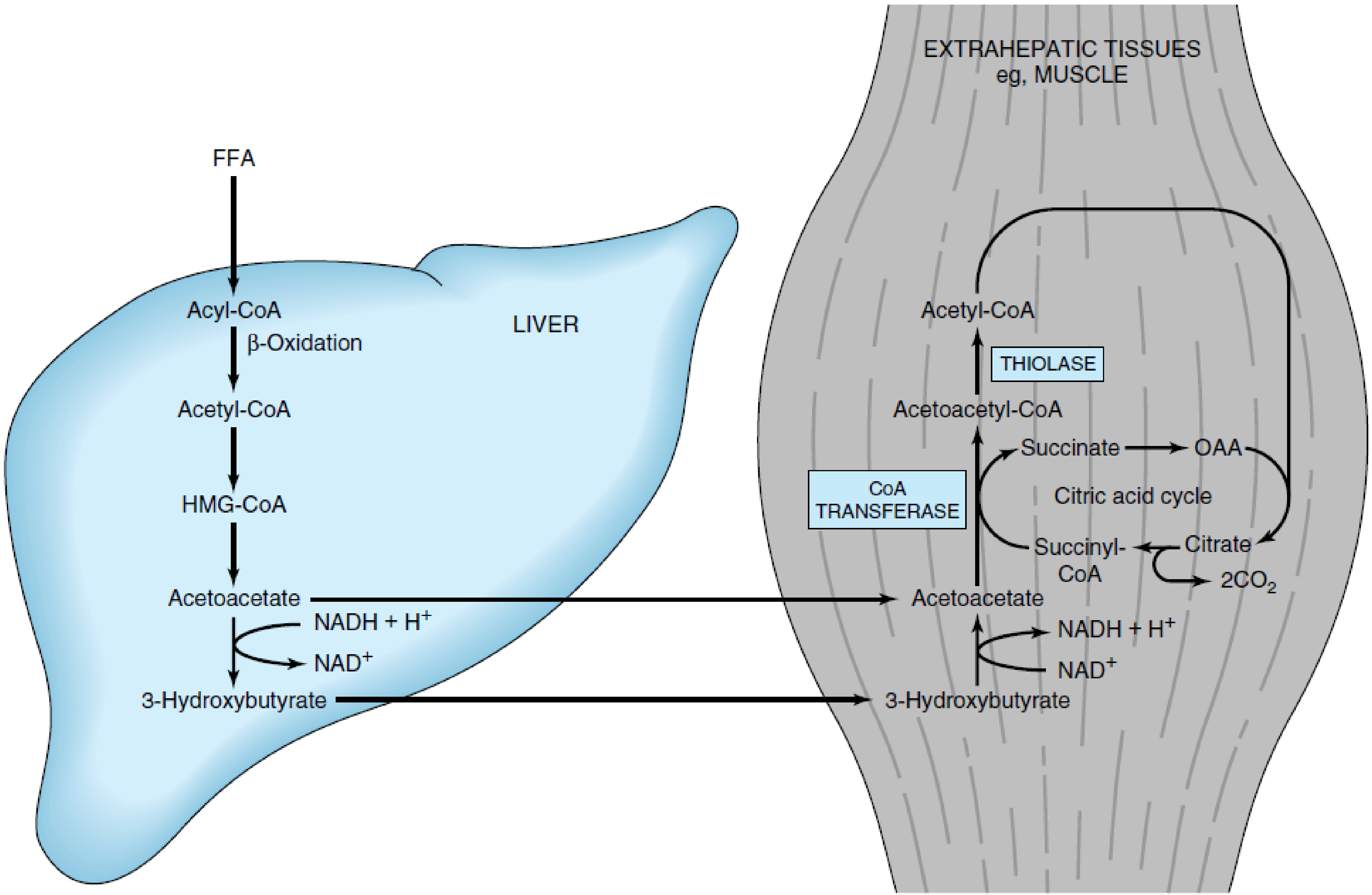


Harper's Biochemistry Figure 30–20. Catabolism of the beta-methylcrotonyl-CoA formed from L-leucine. Asterisks indicate carbon atoms derived from CO_2.

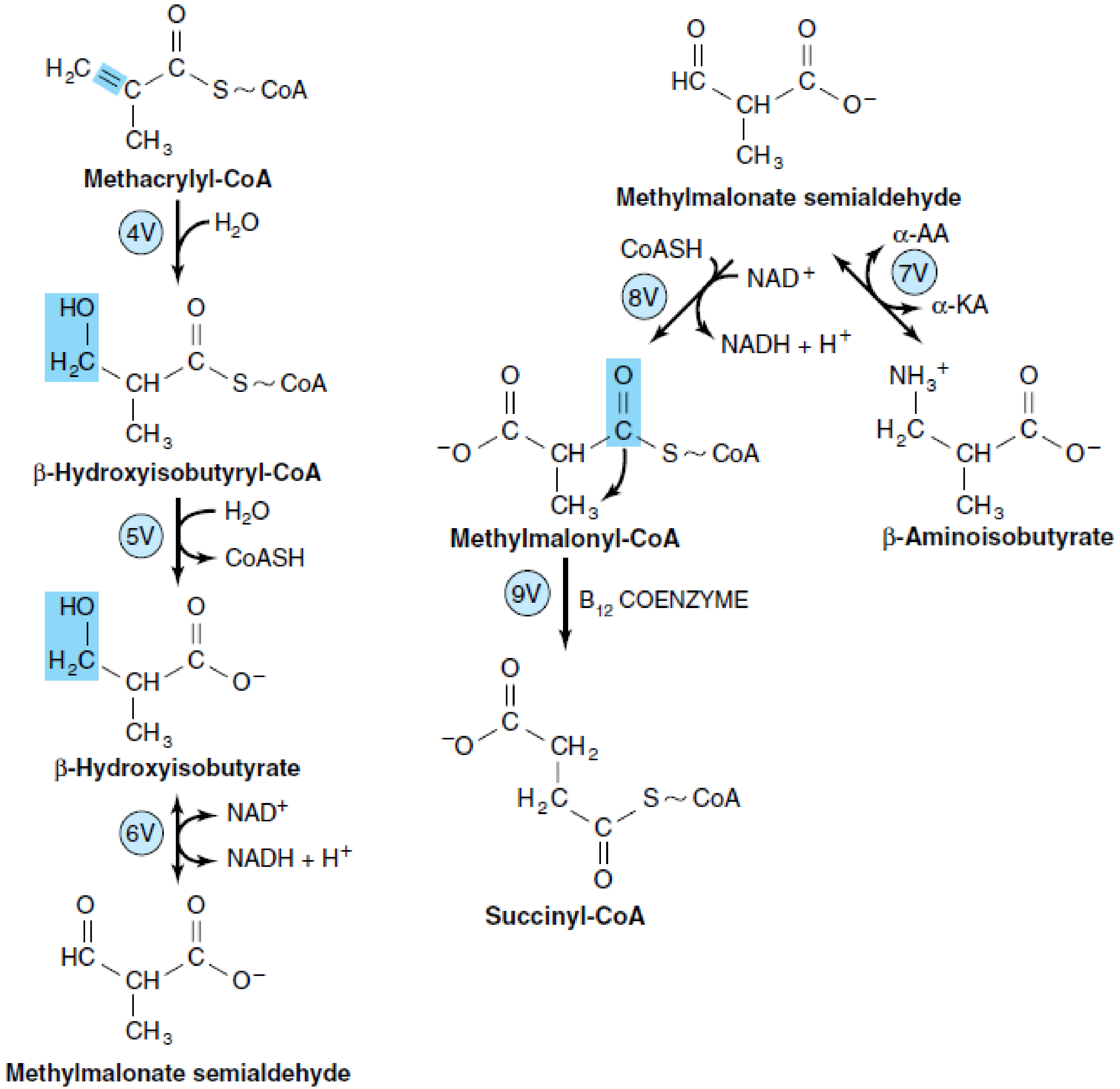
Harper's Biochemistry Figure 30–21. Subsequent catabolism of the tiglyl-CoA formed from L-isoleucine.



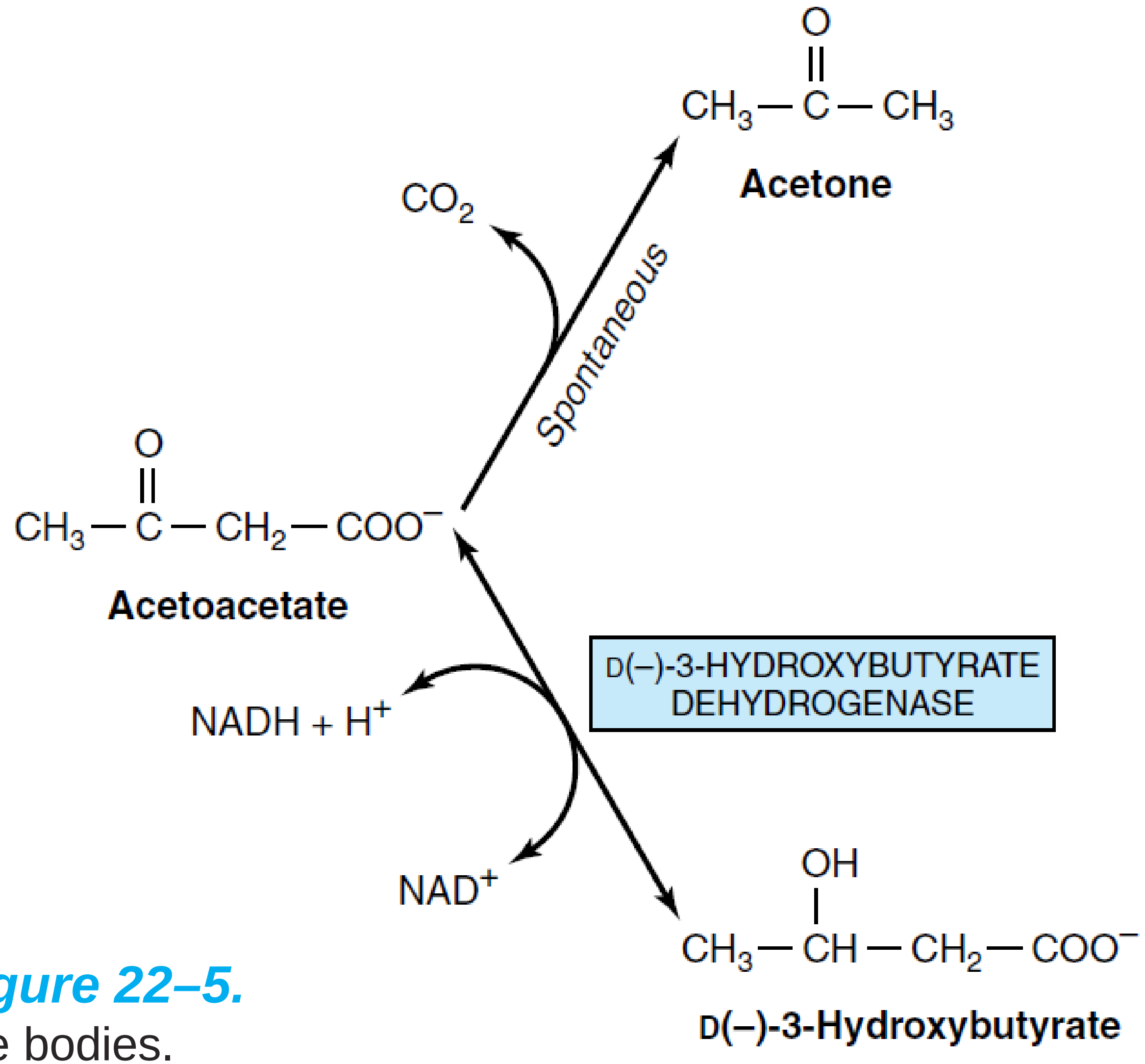




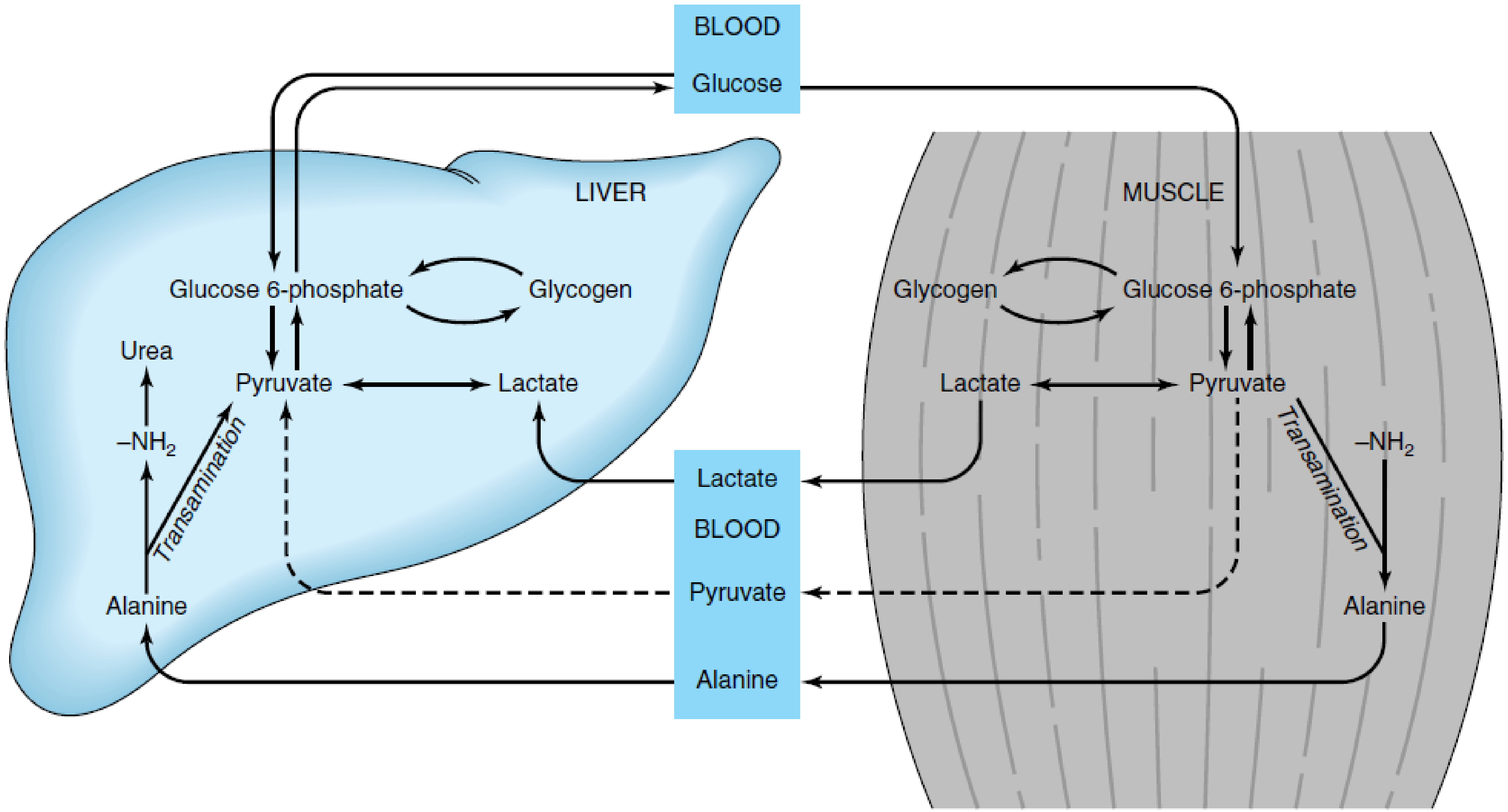
Harper's Biochemistry Figure 22–8. Transport of ketone bodies from the liver and pathways of utilization and oxidation in extrahepatic tissues.



Harper's Biochemistry Figure 30–22.
Subsequent catabolism of the methacrylyl-CoA formed from L-valine (see Figure 30–19). (alpha-KA, alpha-keto acid; alpha-AA, alpha-amino acid.)



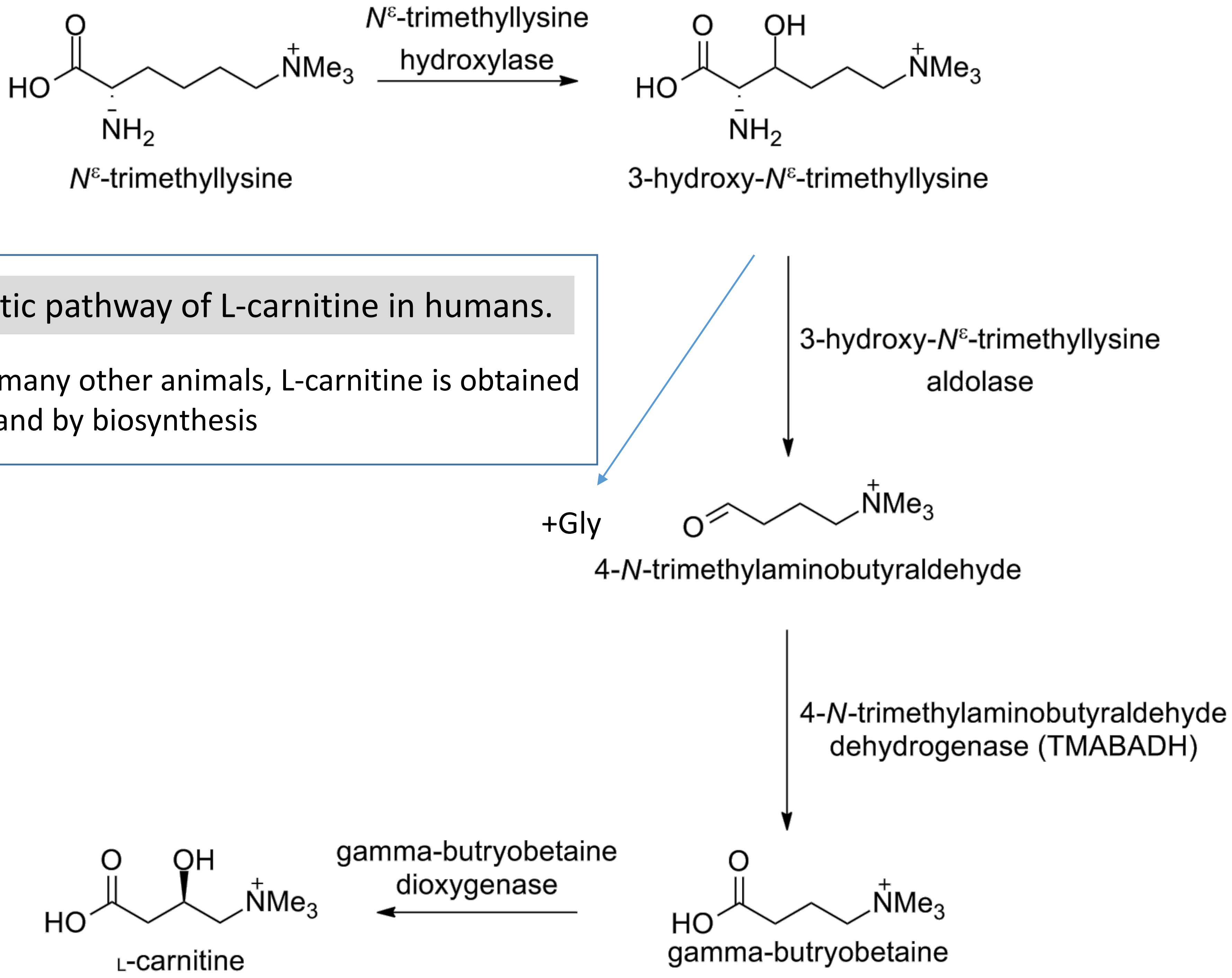
Harper's Biochemistry Figure 22–5.
Interrelationships of the ketone bodies. D(–)-3-hydroxybutyrate dehydrogenase is a mitochondrial enzyme.



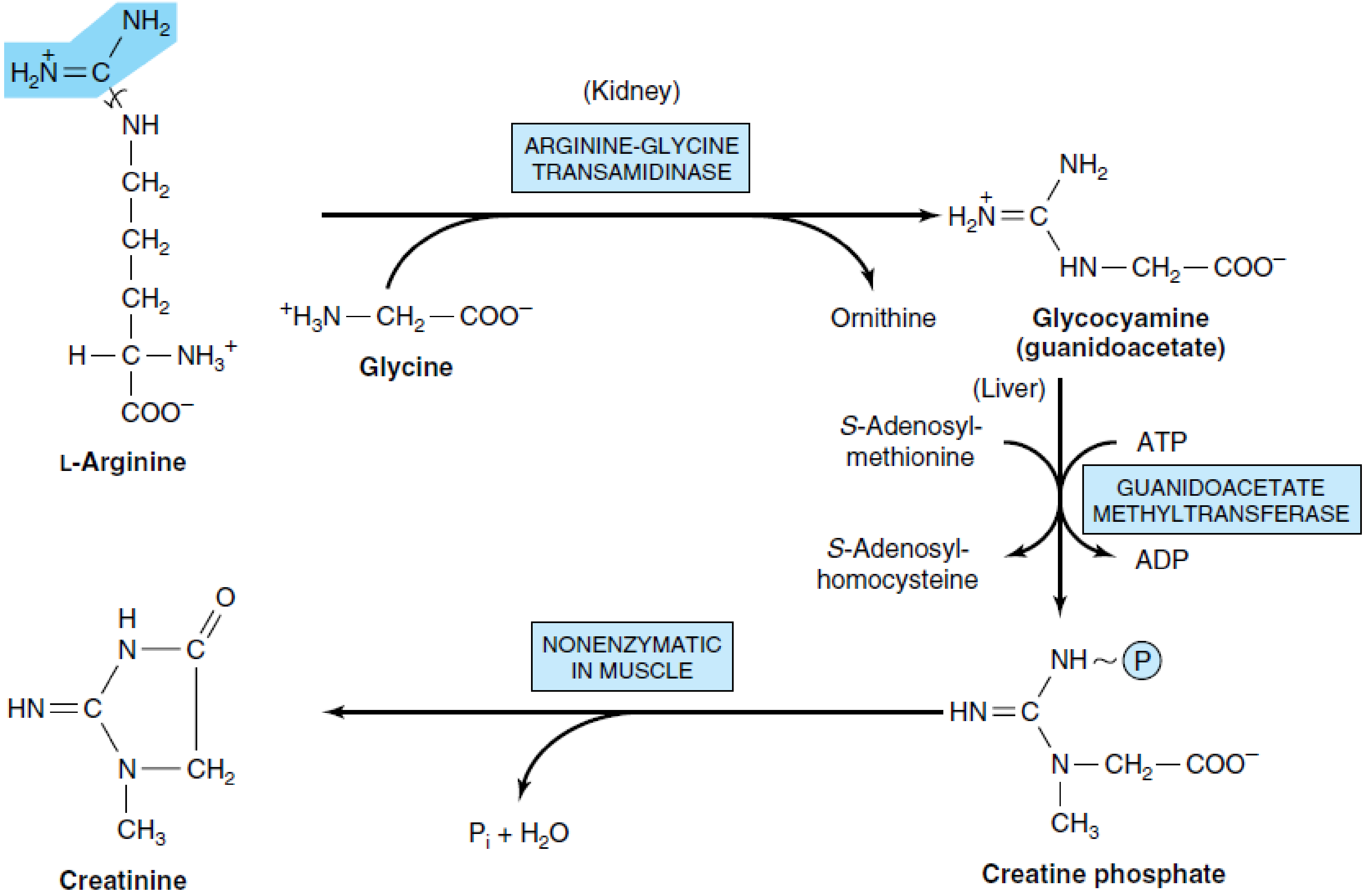
Harper's Biochemistry Figure 19–4. The lactic acid (Cori) cycle and glucose-alanine cycle.

the biosynthetic pathway of L-carnitine in humans.

In humans and many other animals, L-carnitine is obtained from both diet and by biosynthesis



source: wiki



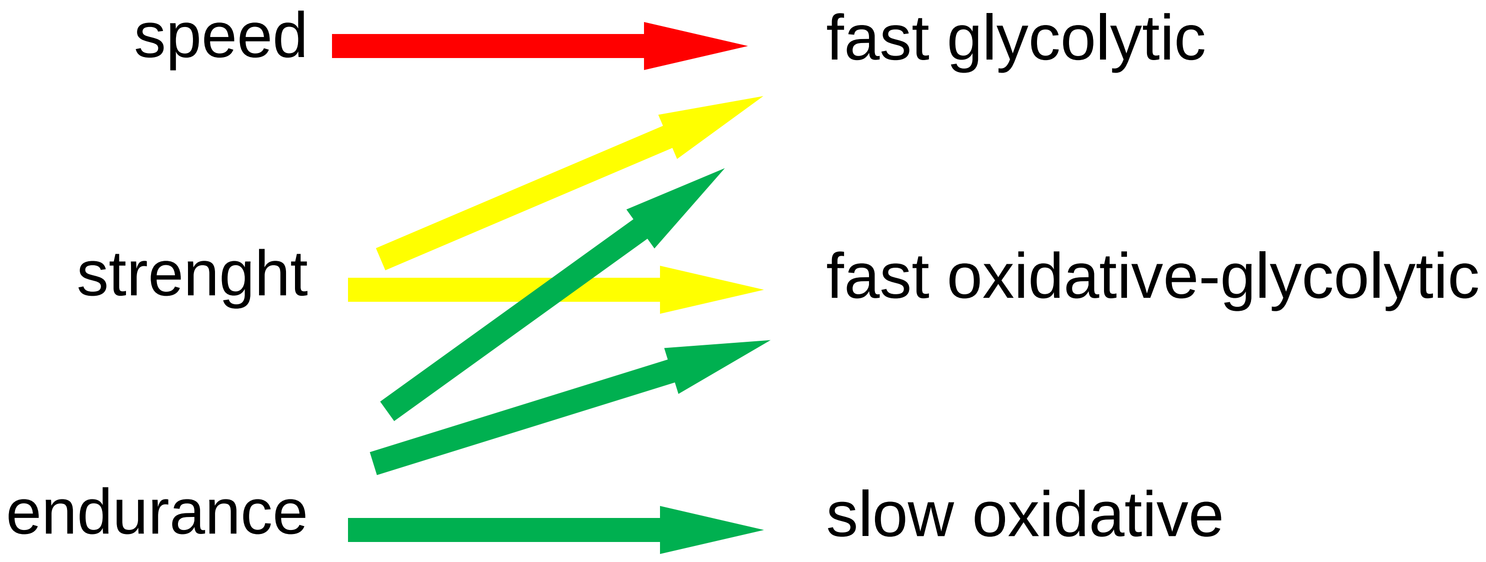
Harper's Biochemistry Figure 31–6.

Biosynthesis and metabolism of creatine and creatinine.

Effect of the training to the muscle

metabolsm of the muscle

muscle mass: hypertrophy



B MODEL OF A SARCOMERE