

ESTTA Tracking number: **ESTTA1112494**

Filing date: **02/05/2021**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Notice of Opposition

Notice is hereby given that the following party opposes registration of the indicated application.

Opposer Information

Name	Jake Wood
Granted to Date of previous extension	02/06/2021
Address	2025 S AIRPORT BLVD CHANDLER, AZ 85286 UNITED STATES
Attorney information	DANIEL R. POTE JENNINGS, STROUSS & SALMON PLC ONE EAST WASHINGTON STREET SUITE 1900 PHOENIX, AZ 85004 UNITED STATES Primary Email: trademarks@jsslaw.com Secondary Email(s): dpote@jsslaw.com, lsmith@jsslaw.com, jpursell@jsslaw.com, mnorton@jsslaw.com 602-262-5832
Docket Number	63470-164

Applicant Information

Application No.	88820239	Publication date	12/08/2020
Opposition Filing Date	02/05/2021	Opposition Period Ends	02/06/2021
Applicant	Invite Health, Inc. 900 SHAMES DRIVE WESTBURY, NY 11590 UNITED STATES		

Goods/Services Affected by Opposition

Class 005. First Use: 0 First Use In Commerce: 0
All goods and services in the class are opposed, namely: Dietary supplements; Nutritional supplements

Grounds for Opposition

Priority and likelihood of confusion	Trademark Act Section 2(d)
Dilution by blurring	Trademark Act Sections 2 and 43(c)
Dilution by tarnishment	Trademark Act Sections 2 and 43(c)

Marks Cited by Opposer as Basis for Opposition

U.S. Registration No.	1340659	Application Date	04/02/1984
Registration Date	06/11/1985	Foreign Priority Date	NONE
Word Mark	FLEX		
Design Mark			
Description of Mark	NONE		
Goods/Services	Class 016. First use: First Use: 1983/02/15 First Use In Commerce: 1983/02/15 Monthly Magazine Relating to Exercise and Fitness		

U.S. Registration No.	2186743	Application Date	01/24/1997
Registration Date	09/01/1998	Foreign Priority Date	NONE
Word Mark	FLEX		
Design Mark			
Description of Mark	NONE		
Goods/Services	Class 042. First use: First Use: 1997/04/00 First Use In Commerce: 1997/04/00 computer services, namely, providing on-line magazines in the field of health and fitness; and providing information inthe field of health and fitness via a global communication information network site		

Attachments	<p>Opposition_Notice_63470_164.pdf(165261 bytes)</p> <p>Exhibits_A_B.pdf(811210 bytes)</p> <p>Exhibit_C1.pdf(5535801 bytes)</p> <p>Exhibit_C2.pdf(3172278 bytes)</p> <p>Exhibit_C3.pdf(4856722 bytes)</p> <p>Exhibit_C4.pdf(4471797 bytes)</p> <p>Exhibit_D.pdf(5954216 bytes)</p> <p>Exhibits_E_F.pdf(5454104 bytes)</p> <p>Exhibit_G.pdf(3155375 bytes)</p>
-------------	--

Signature	/Daniel R. Pote/
Name	DANIEL R. POTE
Date	02/05/2021

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Jake Wood, Individually, and as the)	Opposition No.
owner of JW Holdings LLC,)	
)	_____
Opposer,)	
)	
vs.)	Serial No. 88/820,239
)	
Invite Health, Inc.,)	Mark: FLEX HX
)	
Applicant.)	
_____)	

NOTICE OF OPPOSITION

Jake Wood, a United States Citizen, individually, and as the owner of JW Holdings LLC, a Nevada Limited Liability Company (hereinafter “Opposer”), believes he will be damaged by registration of Application Serial No. 88/820,239 (“the Application”) filed March 4, 2020 and published December 8, 2020 in the name of Invite Health, Inc., for the mark “FLEX HX”, and pursuant to 15 U.S.C. § 1063(a) and having been previously granted an extension of time to oppose, hereby opposes the same and requests that registration of the Application be refused.

As grounds for opposition, Opposer alleges as follows:

1. Opposer and his predecessors in interest have, continuously since at least the early 1980s, used in commerce the trademark FLEX and FLEX-formative trademarks (referred to hereinafter, collectively, as the “FLEX Marks”) to identify a famous, internationally distributed

print magazine devoted to the fields of exercise, health, fitness, nutrition, and bodybuilding. Opposer and his predecessors in interest have further provided online versions of FLEX magazines and related publications under the FLEX Marks to the public for more than two decades.

2. Opposer is the owner of all right, title, and interest in and the FLEX Marks.

3. Opposer and his predecessors in interest have widely and extensively used the FLEX Marks in connection with magazines and online publications dedicated to exercise, health, fitness, nutrition, and bodybuilding since long prior to the filing date of the Applicant's application.

4. Opposer owns the valid and subsisting United States Trademark Registration Number 1,340,659 ("the '659 Registration") for the FLEX trademark registered June, 11, 1985 in connection with "Monthly magazine relating to exercise and fitness" in International Class 16. The '659 Registration claims a first use in commerce date of February 15, 1983. Exhibit A is a copy of the registration certificate for the '659 Registration for the FLEX trademark.

5. Opposer owns the valid and subsisting United States Trademark Registration Number 2,186,743 ("the '743 Registration") for the FLEX trademark registered September 1, 1998 in connection with "Computer services, namely, providing on-line magazines in the field of health and fitness; and providing information in the field of health and fitness via a global communication information network site" in International Class 42. The '743 Registration claims a first use in commerce date of April 1997. Exhibit B is a copy of the registration certificate for the '743 Registration for the FLEX trademark.

6. Both the '659 Registration and the '743 Registration have become incontestable within the meaning of Section 15 of the Lanham Act, 15 U.S.C. § 1065. Therefore, these registrations constitute prima facie evidence of the validity of the marks and registrations, and of

Opposer's ownership of the exclusive right to use the marks in connection with the goods set forth in the registrations.

7. Since at least as early as 1983, Opposer and his predecessors in interest have used an international family of trademarks and trade names comprising or including the word "Flex" in connection with print magazines and publications in the field of exercise, health, fitness, nutrition, and bodybuilding (the "FLEX Marks"). Exhibit C consists of examples of Opposer's FLEX Marks on print publications.

8. Since as early as the 1990s, Opposer and his predecessors in interest have used an international family of trademarks and trade names comprising or including the word "Flex" in connection with online articles, blogs, publications and various digital content in the field of exercise, health, fitness, nutrition, and bodybuilding, examples of which are displayed in Exhibit D.

9. Since at least as early as 1997, and his predecessors in interest have used the FLEX Marks in connection with exercise, health, fitness, nutrition, and bodybuilding magazines online via Opposer's website. Exhibit E features current articles available on Opposer's website.

10. Opposer and his predecessors in interest have extensively and globally promoted the FLEX Marks and their associated goods and services to the public through various channels of trade for more than 37 years.

11. Opposer owns a global portfolio of valid registrations for the FLEX Marks, including FLEX in Argentina (Registration Numbers 2792315 and 2731309), Australia (Registration No. 792055), Austria (Registration No. 174377), Benelux (Registration No. 698930), Canada (Registration No. TMA283742), Czech Republic (Registration No. 223102), France (Registration No. 98727683), Germany (Registration No. 1094282), Greece (Registration No.

102829), Hong Kong (Registration No. 199813138), Hungary (Registration No. 158629), Ireland (Registration No. 209899), Italy (Registration No. 0000816092), Poland (Registration No. R.132212), Portugal (Registration No. 334790), Romania (Registration No. 047906), Russian Federation (Registration No. 204044), Slovakia (Registration No. 191412), Switzerland (Registration No. 453540), Taiwan (Registration No. 00872046), Turkey (Registration No. 201347186), Ukraine (Registration No. 24787), United Kingdom (Registration No. 1245417), as well as FLEX WEIDER in Mexico (Registration Numbers 1625282, 1625283 & 1625284), JOE WEIDER'S FLEX in India (Registration No. 3281952), and JOE WEIDER FLEX MEGAFITNESS in Spain (Registration No. M1977498).

12. Applicant, Invite Health, Inc. (“Applicant”), filed the Application on March 4, 2020 to register the subject Intent-to-Use United States Trademark Application Serial Number 88/820,239 (i.e. FLEX HX) as a trademark for “Dietary supplements; Nutritional supplements”.

COUNT I
LIKELIHOOD OF CONFUSION
15 U.S.C. § 1052(d)

13. Paragraphs 1 - 12 are hereby incorporated by reference.

14. The FLEX Marks embody substantial goodwill across the United States, and internationally.

15. The FLEX Marks are recognized and relied on by consumers to identify Opposer as the source of the goods and services promoted under the FLEX Marks and to distinguish them from the goods and services of others.

16. By virtue of Opposer’s and his predecessors’ widespread and continuous use and promotion of the FLEX Marks to identify Opposer’s goods and services and Opposer as the source

of the goods and services, Opposer owns valid and subsisting federal statutory and common law rights to the FLEX Marks.

17. Opposer has both priority of use and registration over Applicant for Applicant's Application, and thus Opposer's rights in the FLEX Marks precede any rights Applicant may have in the subject mark of Applicant's Trademark Application.

18. Applicant's Application contains the same characters as Opposer's '659 and '743 Registrations, the only difference being the unsubstantial addition of the letters "HX."

19. Applicant's virtually identical FLEX HX application so resembles Opposer's FLEX Marks in sight, sound, meaning, and commercial impression as to be likely to cause confusion or mistake in the minds of the public, deceive, or lead the public and prospective purchasers into believing Applicant's goods are those of Opposer or are endorsed or sponsored by, or otherwise affiliated or connected with Opposer, or that Opposer's goods and services are associated with Applicant, all to the damage injury to the purchasing public and Opposer.

20. The goods claimed in Applicant's Application are closely related to the goods and services claimed in Opposer's FLEX Marks because dietary supplements and vitamins are commonly and logically associated with exercise and fitness nutrition.

21. Opposer's goods and services frequently include content related to, reviews of, and articles about nutritional and dietary supplements, as clearly demonstrated in Exhibits C - E. A keyword search of Opposer's website for "supplements" returned 1,649 articles and publications, as demonstrated in Exhibit F.

22. Applicant's Application does not limit the channels of trade in which its goods are offered, therefore, it is presumed that Applicant's goods travel in the same channels of trade as Opposer's goods and services.

23. Applicant's Application does not limit the pool of consumers to which its goods are offered; therefore, it is presumed that Applicant's goods are marketed to all consumers normal for dietary and nutritional supplements.

24. Use of Applicant's mark is likely to falsely suggest a relationship between Applicant's goods and services and Opposer, allowing Applicant to benefit from the goodwill associated with Opposer's FLEX Marks.

25. The use and application by Applicant of Applicant's FLEX HX mark is without Opposer's consent and is likely to cause confusion in the minds of consumers as to the source, affiliation, endorsement, and/or association between Applicant, Opposer, and their respective goods and services. Such use may cause a significant level of misplaced purchases of Applicant's goods by consumers who would be misled by the use of Applicant's mark into believing that Opposer is the source of, or associated with, Applicant's goods and services.

26. Registration of Applicant's applied-for mark will likely cause injury to Opposer's reputation and will injure and impair Opposer's rights in the FLEX Marks by causing confusion, mistake, and/or deception as to the respective rights of the parties and as to the source or sponsorship of goods and services.

27. Applicant's FLEX HX mark substantially incorporates Opposer's FLEX Marks. The respective goods and services of Opposer and Applicant are extremely highly related and are presumed to travel in the same channels of trade to the same consumers.

28. Given Opposer's and his predecessors in interests' prior use and common law rights, Applicant's FLEX HX mark, when used in connection with the goods identified in Application Number 88/820,239, is likely to cause confusion and mistake as to the source,

sponsorship, affiliation, endorsement, and/or association between Applicant, Opposer, and their respective goods and services under Section 2(d) of the Trademark Act.

29. The use and application by Applicant of Applicant's FLEX HX mark is without Opposer's consent and Opposer will be damaged by Applicant's use of the FLEX HX mark, and issuance of the registration sought by application would give color of exclusive statutory rights to Applicant in violation and derogation of the prior and superior rights of Opposer.

30. Registration of Applicant's FLEX HX mark is inconsistent with Opposer's rights under the '659 Registration and the '743 Registration, and would provide Applicant with rights that interfere with Opposer's rights in the FLEX Marks and the '659 Registration and the '743 Registration.

31. Opposer has the right to continue using the FLEX Marks in connection with Opposer's goods and services without interference by Applicant and without a likelihood of consumer confusion, mistake, or deception.

32. Accordingly, registration of Applications proposed FLEX HX mark is barred by the provisions of 15 U.S.C. § 1052(d) on the grounds that Applicant's mark so resembles Opposer's FLEX Marks as to cause confusion, mistake and/or deception, all to the damage of Opposer.

33. In view of the foregoing, Opposer believes that Applicant is not entitled to federal registration of FLEX HX, pursuant to Section 2(d) of the Trademark Act, 15 U.S.C. § 1052(d).

COUNT II
DILUTION
15 U.S.C. § 1125(c)

34. Opposer repeats and re-alleges each and every allegation set forth in paragraphs 1-33 as though fully set forth herein.

35. Opposer and his predecessors in interest have invested substantial time, effort, and resources for nearly forty years to extensively advertise and promote FLEX Marks and the goods and services provided under the FLEX Marks.

36. For many years, and long prior to Applicant's filing of Application Serial No. 88/820,239, Opposer and his predecessors in interest have offered exercise, health, fitness, bodybuilding, diet and nutrition information, advice, articles, and reviews specific to dietary and nutritional supplements under the FLEX Marks.

37. For many years, and long prior to Applicant's filing of Application Serial No. 88/820,239, Opposer and his predecessors in interest have offered exercise, health, fitness, bodybuilding, dietary and nutritional supplement information and advice under the FLEX Marks at numerous public and bodybuilding events and at fitness events sponsored by FLEX magazines.

38. Opposer and his predecessors in interest have a history of longstanding and extensive use of the FLEX Marks throughout the United States and in at least 27 foreign countries demonstrate the geographic reach of advertising and publicity of the mark. Exhibit G consists of samples of Opposer's FLEX marks in use domestically and abroad.

39. Since long prior to Applicant's Application date, Opposer, his predecessors, affiliates and their respective affiliated and related entities, licensees and/or sponsors have promoted and advertised the sale and/or distribution of goods and services bearing or offered in

connection with Opposer's Marks and have sold or distributed such goods and rendered such services in interstate and international commerce.

40. Opposer's FLEX Marks have acquired a highly favorable reputation among members of the purchasing public, and have become valuable symbols of Opposer's goodwill.

41. By virtue of the high degree of consumer recognition and acquired distinctiveness of the FLEX Marks, the long duration and extensive use of the FLEX Marks in connection with the goods and services in the fields of exercise, health, fitness, bodybuilding, diet and nutrition, the longevity and extensive advertising and promotion of the FLEX Marks, and the expansive trading area in which the FLEX Marks have been used, the FLEX Marks have become well-known and famous as distinctive indicators of the origin of Opposer's goods and services, and were famous long before the filing date of Applicant's FLEX HX Application.

42. Opposer has developed considerable valuable goodwill in the FLEX Marks, which have become famous within the meaning of 15 U.S.C. § 1125(c).

43. Any use by Applicant of the FLEX HX mark for the goods set forth in Application Serial No. 88/820,239 will occur long after Opposer's FLEX Marks became famous.

44. On information and belief, Applicant knew or had reason to know of Opposer's prior rights in the FLEX Marks prior to filing the Application, and that use of the goods set forth in Application Serial No. 88/820,239 in connection with the virtually identical FLEX HX mark would cause dilution of Opposer's prior and superior marks.

45. The use and registration by Applicant of the FLEX HX mark for the goods set forth in Application Serial No. 88/820,239 is therefore likely to diminish, blur, and cause dilution of the distinctive quality of Opposer's FLEX Marks to the great detriment of Opposer's marks.

46. Use of Applicant's mark will significantly damage Opposer and will cause Opposer to lose control of the good and valuable reputation represented by and derived from the goodwill imbued in Opposer's marks.

47. Use of Applicant's opposed mark may cause dilution by tarnishment and impair the ability of the FLEX Marks to carry an association of quality and safety should issues arise with Applicant's goods.

48. Based on the foregoing, the grant of a registration for Applicant's mark should be denied based on a likelihood of dilution of the distinctive quality of Opposer's famous FLEX Marks, in violation of Section 43(c) of the Lanham Act, 15 U.S.C. § 1125(c).

WHEREFORE, Opposer requests that this Opposition be sustained, that Application Serial Number 88/820,239 be rejected, and that the mark therein sought be refused registration.

Respectfully Submitted this 5th day of February, 2021.

/Daniel R. Pote/

Daniel R. Pote
dpote@jsslaw.com
Jimmie W. Pursell
jpursell@jsslaw.com
Lauren R. Smith
lsmith@jsslaw.com

JENNINGS, STROUSS & SALMON, PLC
One E. Washington, Suite 1900
Phoenix, Arizona 85004
Tel. (602) 262-5824
Fax: (602) 495-2630
Email: *trademarks@jsslaw.com*
Attorneys for Opposer

CERTIFICATE OF FILING

I, Daniel R. Pote, hereby certify that a true and complete copy of the foregoing NOTICE OF OPPOSITION was electronically filed in the United States Patent and Trademark Office through the Electronic System for Trademark Trials and Appeals on this 5th day of February, 2021.

/Daniel R. Pote/
Daniel R. Pote

EXHIBIT A

United States of America

United States Patent and Trademark Office

FLEX

Reg. No. 1,340,659

Registered Jun. 11, 1985

New Cert. Sep. 22, 2020

Int. Cl.: 16

Trademark

Principal Register

Jake Wood (UNITED STATES INDIVIDUAL)
2025 S Airport Blvd
Chandler, ARIZONA 85286

CLASS 16: Monthly Magazine Relating to Exercise and Fitness

FIRST USE 2-15-1983; IN COMMERCE 2-15-1983

SER. NO. 73-473,476, FILED 04-02-1984



Andrew L. Han

Director of the United States
Patent and Trademark Office



EXHIBIT B

United States of America

United States Patent and Trademark Office

FLEX

Reg. No. 2,186,743

Registered Sep. 01, 1998

New Cert. Sep. 22, 2020

Int. Cl.: 42

Service Mark

Principal Register

Jake Wood (UNITED STATES INDIVIDUAL)
2025 S Airport Blvd
Chandler, ARIZONA 85286

CLASS 42: computer services, namely, providing on-line magazines in the field of health and fitness; and providing information in the field of health and fitness via a global communication information network site

FIRST USE 4-00-1997; IN COMMERCE 4-00-1997

OWNER OF U.S. REG. NO. 1340659

SER. NO. 75-231,063, FILED 01-24-1997



Andrei Iancu

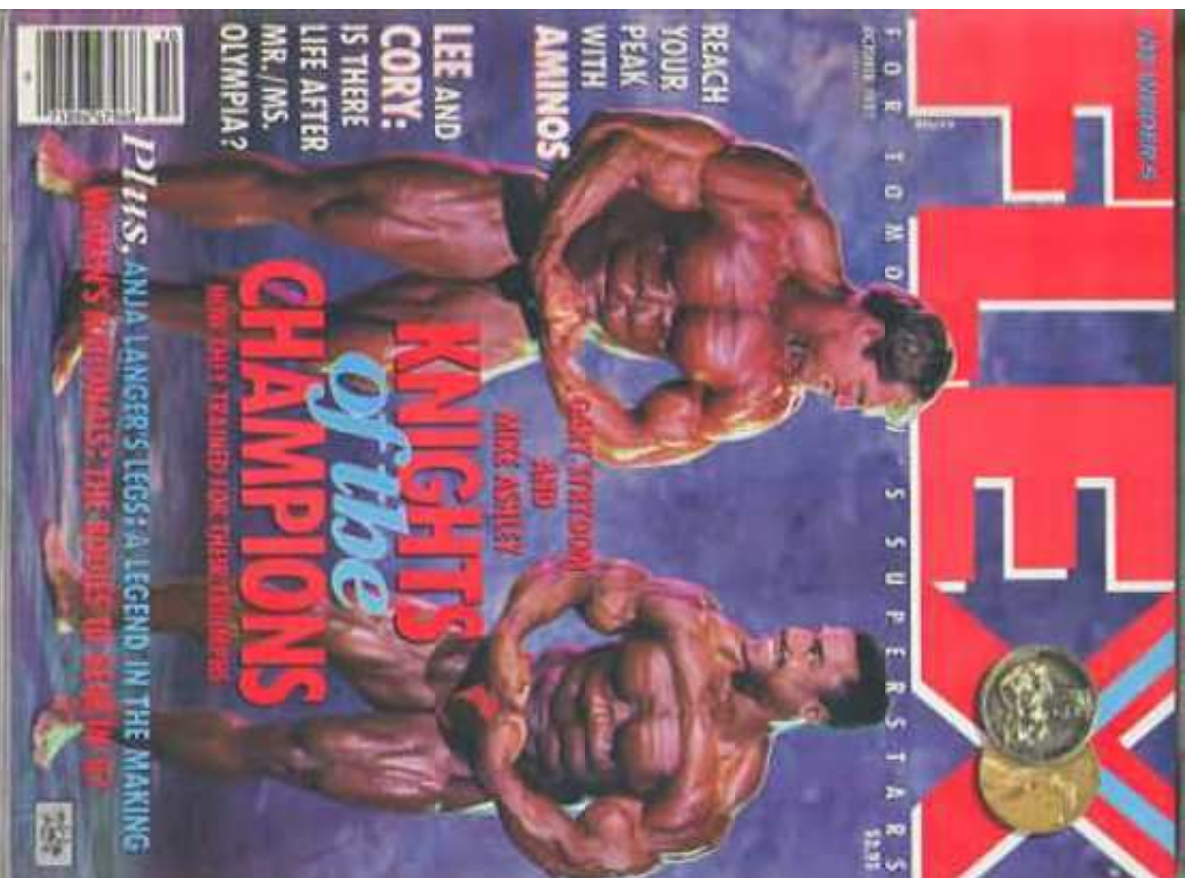
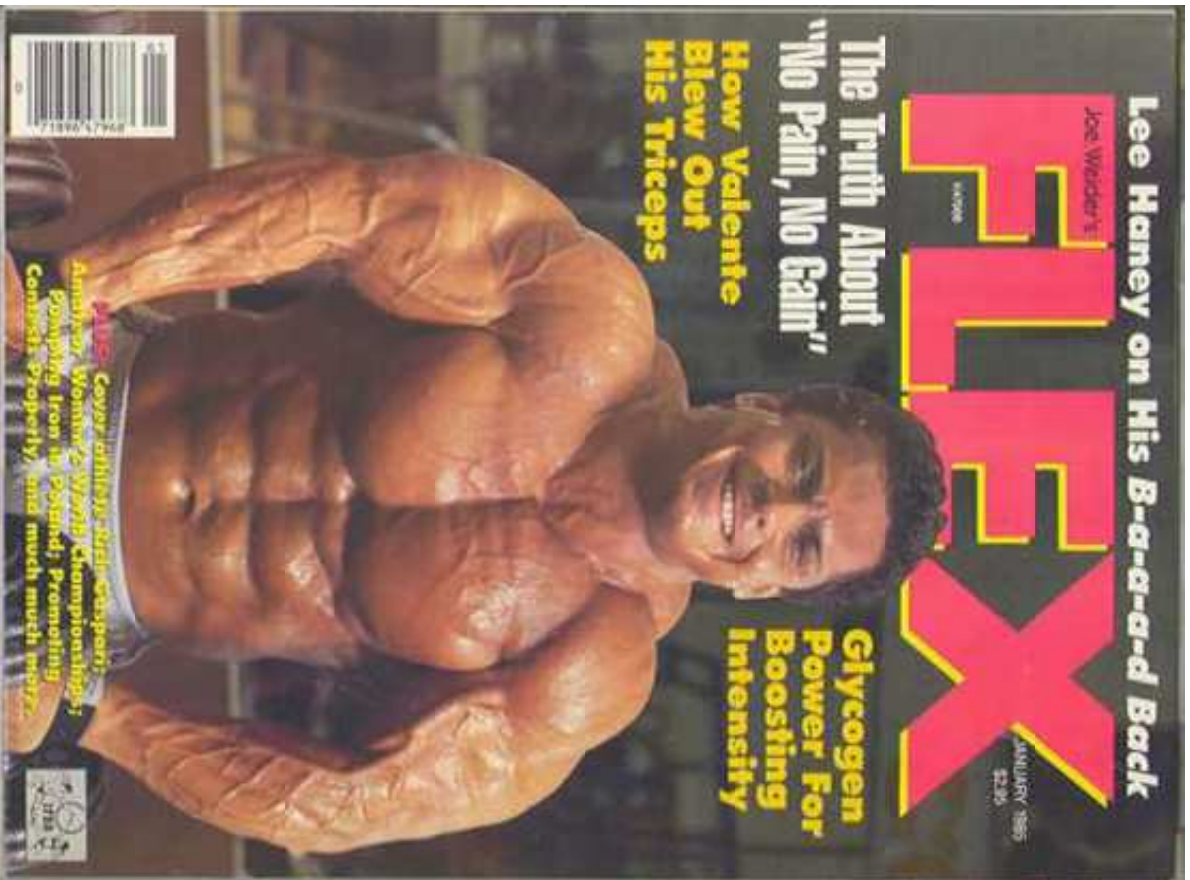
Director of the United States
Patent and Trademark Office

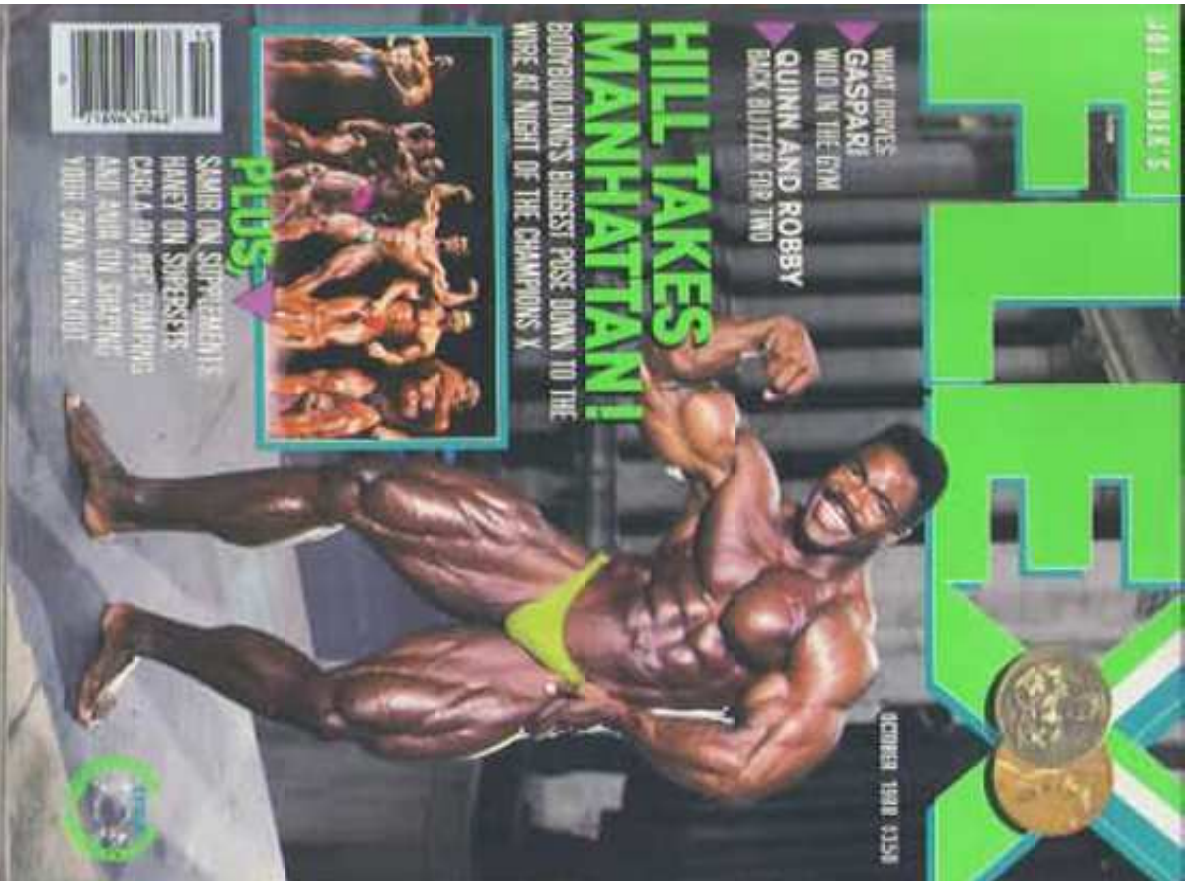


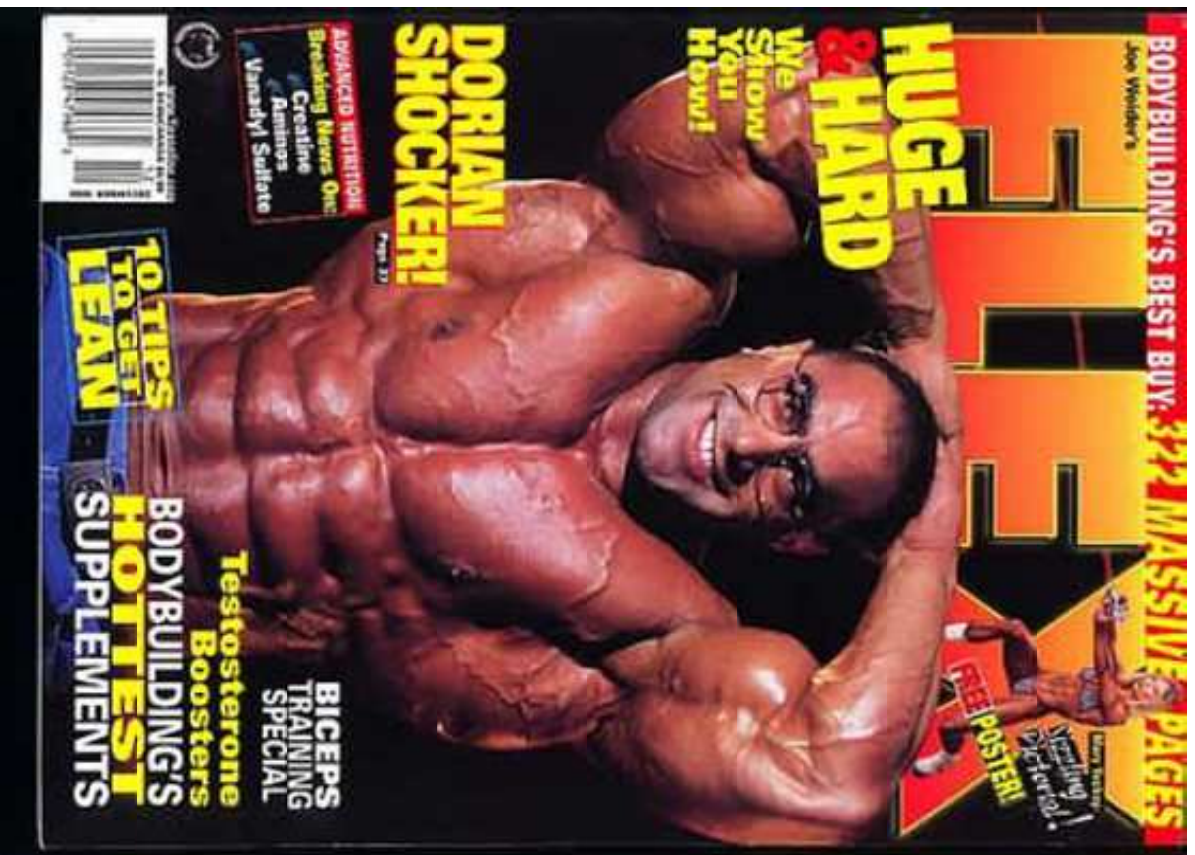
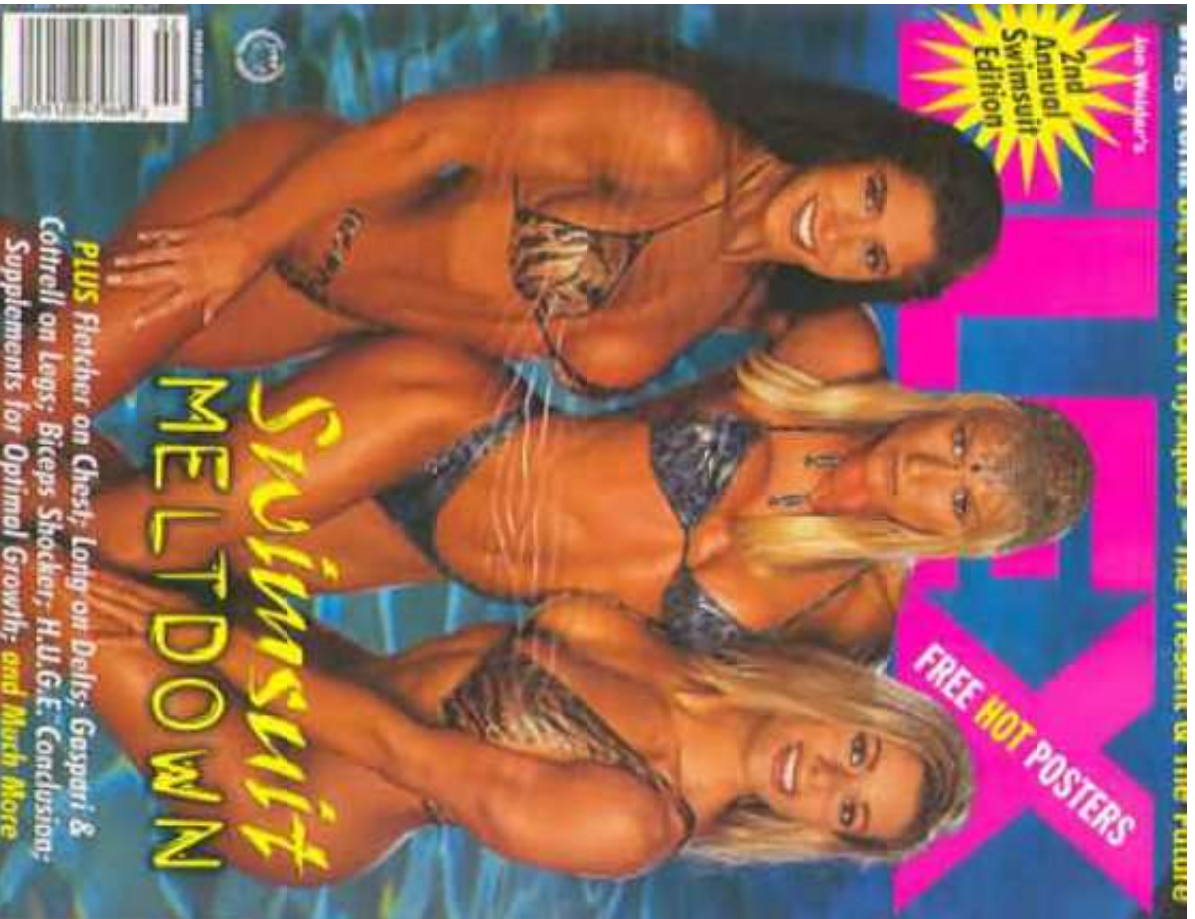
EXHIBIT C

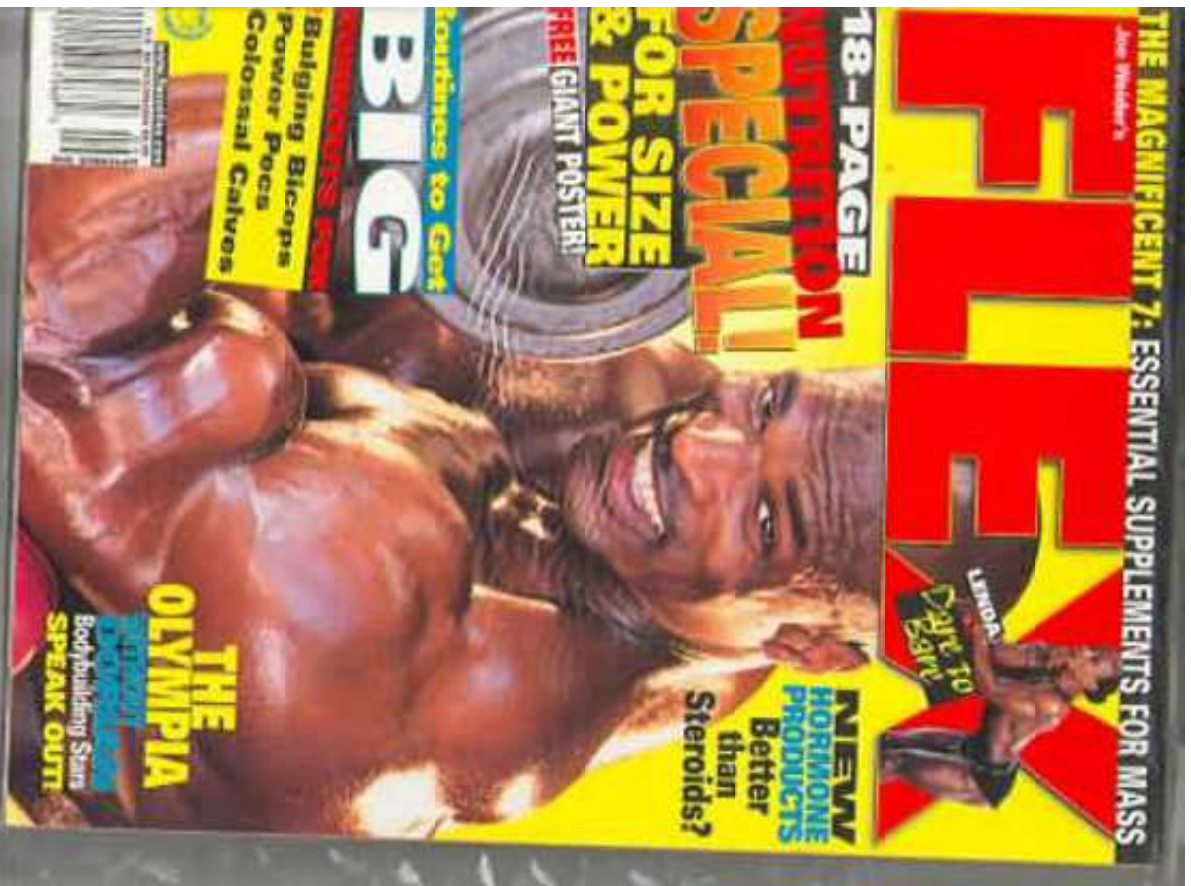


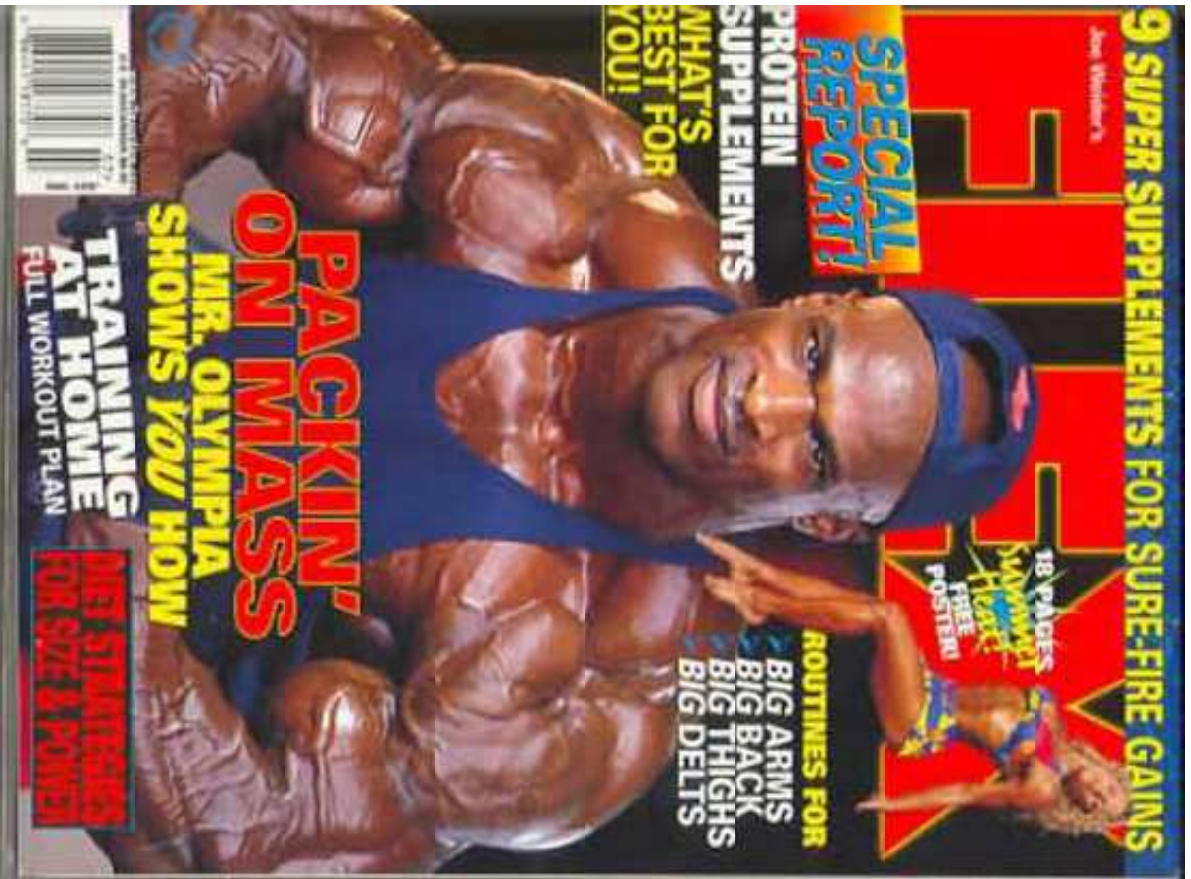
EXHIBIT C
2 of 16











FREE! TWO GIANT TRAINING POSTERS

GET MUZZE, FAST!
WE SHOW YOU HOW!

YOUR PROTEIN NEEDS: COMPLETE GUIDE

19-PAGE SPECIAL THE ULTIMATE DELT WORKOUT

SUPPLEMENTS FOR MASS

AMAZING PICS! THE 405-POUND CURL

STUBBORN BICEPS? QUICK-FIX ROUTINE

From Mr. Olympia
Steve Niver's
A. T. Johnson

TRAINING AND NUTRITION BLOCKBUSTER!

FREE! SEE THE MR. OLYMPIA LIVE!
From Ms. ... To This?
Page 88

BIG TIME!
Workouts For
POWER PECS
3-D DELTS
BULGING BICEPS

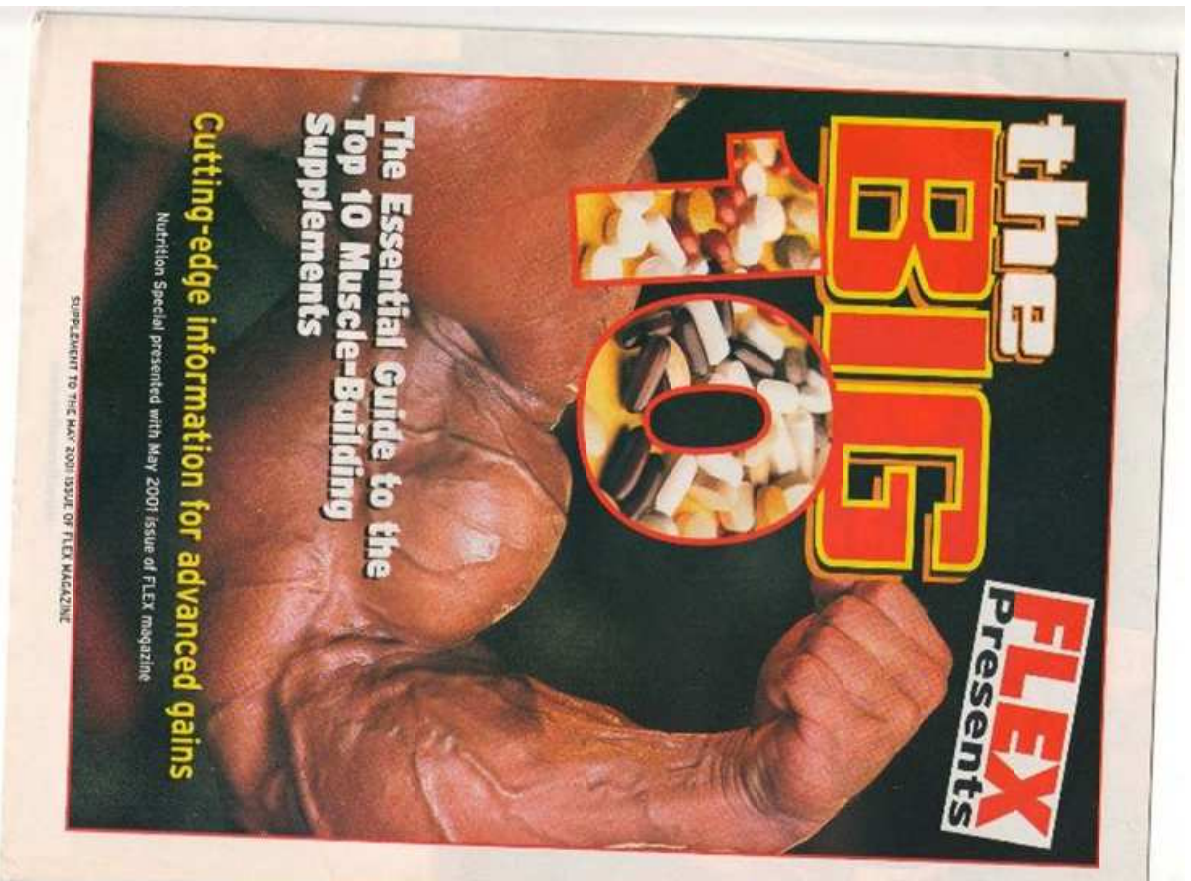
17-PAGE SPECIAL A-Z OF SUPPLEMENTS
Everything You Need To Know

13 STEPS TO MASS

EATING FOR SIZE

RECUOPERATION TECHNIQUES
The Key To Building Muscle





2001 MR. G: DID RONNIE GET A GIFT? p150

FLEX

HUGE IN 2002!

MR. O'S PROGRAM FOR SIZE & POWER

How It Can Work For YOU!

BIG BICEPS!
The 5 Exercises You Need!

EPHEDRINE!
The Skinny on Getting Cut p176

FAT-BURNING SUPPLEMENTS p138

POSTWORKOUT PROTEIN p90

CARNITINE AND IGF-1 p94

HMB p95

GIANT TRAPS
How To Build 'em

GIRL POWER!
Hardbody Workout p246

Joe Weider's

2001 MR. G: DID RONNIE GET A GIFT? p150

COLLECTOR'S EDITION: OUR FIRST 20 YEARS!

FLEX

GIANT POSTER! FREE INSIDE

20th ANNIVERSARY KICKOFF

THE PARTY STARTS NOW!

13 Workouts; 3 Meal Plans; 29 Exercises for Mass; 5 Get-Lean Strategies PLUS ARNOLD EXCLUSIVE and a bonanza of must-see surprise features CELEBRATING 20 YEARS of FLEX

ARNOLD
Killer Mr p164

PORIAN
Pounder Packed p166

LEE
Does Deeds p62

SHAWN
Smoker 'n' p276

MIKE'S
Mass Plan p196

RONNIE
Muscle Builder p172

JAY'S
Mind Over p200

ANN
Sizzle p198

Apr. 2003 flexmag.com
U.S. \$5.99 / CANADA \$7.99
\$5.29

0 2002 4241 5618 7279 1 40001

FREE! GIANT WORKOUT POSTER
JOE WEIDERS

FLEX

POWER ISSUE

30 | **5 MASS WORKOUTS**
PAGE | **6 KEY EXERCISES**
SPECIAL | **8 SUPER SUPPLEMENTS**

All You Need To Know To Get Big and Strong

ARNOLD'S ARM BLAST p291
DÄS FREAK
 Ruhl's Wild Workout

EXCLUSIVE
RONNIE'S WORST NIGHTMARE
 278 Pounds Shredded, and Only 25 Years Old p102

PLUS ROUTINES FOR AWESOME
PECS, DELTS, BICEPS, ABS, TRICEPS, CALVES

ONLY \$4.99

JULY 2004 flexmag.com
 ISSN 1083-312X
 0129

8 NEW SUPPLEMENTS
 HOTTER THAN EPHEDRA

WHO'S GONNA WIN THE "O"?

JOE WEIDERS

FLEX

16-PAGE SPECIAL
READY, SET, GROW
 RADICAL X-FRAME
 12-WEEK TRAINING PROGRAM

ARNOLD EXCLUSIVE
 Inside The Governor's Cabinet Office

THE TWO-REP WORKOUT WITH 700-POUND SQUATS
 Seeing Is Believing

GET A GRIP
 And Build Muscle Quicker

NEVER HEARD OF HIM? YOU WILL!
PHIL HEATH
 ON THE FAST TRACK TO SUCCESS

WE HAVE A NEW LOOK. NOW IT'S YOUR TURN!

JULY 2004 flexmag.com
 ISSN 1083-312X
 0129



10 RULES FOR A MASSIVE CHEST AND WIDER SHOULDERS P. 244

LEE HANEY

TOTALLY AWESOME!

21 TRADE SPECIALS

THE WORKOUTS THAT WON 8 SANDOWS

In the Training Hall With Rich Galardi

HUGE BICEPS!

Two Rising Stars Show You How

THE BEST PROTEIN SUPPLEMENT YOU'RE NOT TAKING P. 270

EAT FOR SIZE

HOW TO GET BIG ON YOUR BUDGET!

Plus: Day in the Life of Fitness Superstar Uffe; An Interview With Mike Mentzer; Can Dieting Kill?; Personal Development: Behind the Veil

ISSN 1043-8005

0 74308 51085 4

U.S. \$6.99/Canada \$8.99

October 2009 fitnessmag.com

1 23

Distrib. Unit: November 18, 2009

LOSE FAT—KEEP MUSCLE! Your Step-By-Step 1-DAY Meal Plan

15 MINUTES TO GAIN

SIZE POWER STRENGTH & MORE

DOUBLE YOUR BENCH TRIPLE YOUR SQUAT

YOU CAN'T ARGUE WITH SCIENCE P. 98

TRAP ATTACK

SHRUG FOR SIZE P. 106

MELVIN ANTHONY

BLOWS IT UP

523

HARDCORE BODYBUILDING TIPS & TRICKS

AMATEUR HOUR

NPC NATIONALS PREVIEW AND PROFILES

THE BEST SUPPS YOU'VE NEVER HEARD OF P. 228

U.S. \$6.99/Canada \$8.99

October 2009 fitnessmag.com

1 23

Distrib. Unit: November 18, 2009

BUILD A BETTER BACK WITH JUAN MOREL
JOE WEIDERS'S **FLEX** EXCLUSIVE PHOTOS
MASS ATTACK
PI14 **DORIAN YATES**
2012 USAs
CONTEST REPORT
CONTROLLING YOUR REP SPEEDS FOR ULTIMATE GAINS
PI79
POWER-RIOS GYM USA
FULL VS. PARTIAL REPS
PI12 **WHAT'S BEST FOR MUSCLE GROWTH?**
NUTRITION BREAKTHROUGHS!
WHICH FOODS CAN HALT YOUR TRAINING PROGRESS?
PI26
EXCLUSIVE PHOTOS
EXONLINE.COM
0 74808 51085 9
Display Until October 29, 2012

BUILD SHOULDERS LIKE MR. OLYMPIA
JOE WEIDERS'S **FLEX** HARDCORE TRAINING EDITION!
RONNIE COLEMAN
DIE, TRAINING & ONSTAGE BATTLES
PI48
JOE WEIDER TRIBUTE
PI18
THE 2013 FLEX SUPPLEMENT GUIDE
100 REVIEWS INSIDE
PI235
GET HUGE TRAPS NOW
FREE POSTER INSIDE!
RONNIE COLEMAN
EXCLUSIVE PHOTOS
EXONLINE.COM
0 74808 51085 9
Display Until April 22, 2013

> 417 MUSCLE-BUILDING TIPS INSIDE!

FLUX

THE SECRET TO...

BIG BICEPS

AND THE HUGE MISTAKE YOU NEED TO AVOID!

5 MOVES FOR A MASSIVE CHEST

BUILD A BEASTLY BACK!

WITH THIS KILLER ROUTINE

PERFECT BODY PLAN

Frank Zane
On How He Built the Greatest Physique Ever!

THE RIGHT WORKOUT FOR YOU!

FORGE THE ULTIMATE X-FRAME

BEST MUSCLE-BUILDING PROTEIN

ULTIMATE VITEC

36 0911 34 98748 031

0 14350 04721 4

SUPP UP TO CRUSH EVERY REP P.28

FLUX

CRANK IT UP!

27 WAYS TO BOOST TRAINING INTENSITY

12 RULES FOR THE PERFECT PHYSIQUE

BIG GAINS WITH LOW CARBS?

WHEELS LIKE MR. O'S!

PHIL HEATH'S EXCLUSIVE ROUTINE

GROW YOUR CHEST!

NEW STAR ARASH RAHIBAR'S BLUEPRINT FOR PECS THAT POP

SCULPT MONSTER SHOULDERS WITH JUST 1 MOVE!

THE SECRET FOR MAX RESULTS

BEST MUSCLE-BUILDING PROTEIN

ULTIMATE VITEC

36 0911 34 98748 031

0 14350 04721 4

EXHIBIT D

Free Shipping On Orders \$75+ US Only [Learn More](#)

Supplementation

Encyclopedia Of Supplements: A-F

FLEX [Jim Stoppani Ph.D, FLEX](#)
September 24, 2018 • ⌚ 20 min read

The supplement market is packed with tough-to-pronounce ingredients in pills, powders, softgels and caps galore. Read this encyclopedia; you won't be confused any more!

With all the supplements on the market today, it's hard to figure out what each one does, how much to take, when to take it, and so on. Which ones will pack on size? Which ones will help you get ripped the fastest? With so many questions, wouldn't it be great if you could go to one place that had all the answers to your supplement needs? Such a place doesn't exist, you say? It didn't-until now!

FLEX feels your pain and has put together a list of every worthwhile supplement you're likely to encounter on your next trip to the store. Each is rated for effectiveness and broken down into categories with listed benefits. Plus, we tell you just how much to take and the best times of day (or night) to take them so that all of your hard work in the gym doesn't go to waste. If you were confused about supplements before, you won't be after you read this. So here's Part 1 of the FLEX Supplement Encyclopedia: A to F.

RATING SYSTEM

- ★★★★★ Highly recommended on a daily basis.
- ★★★★ Can boost gains but works more indirectly.
- ★★★ Effectiveness may be based on individual response.
- ★★ Works best in specific situations (for instance, beginners rather than experienced bodybuilders, or vice

NOTE: One-star supplements are not included, as they may not be as beneficial or as essential as higherrated supplements.



Adenosine Triphosphate (ATP)

RATING: ★★★★★☆

CATEGORIES: Mass Builder, Strength, Fat Loss

BENEFITS: Adenosine triphosphate is a nucleic acid and major energy source for every cell in the body. But taking the supplemental form does not increase the amount of ATP within cells. It boosts blood levels of ATP, which increases blood flow to exercising muscles. ATP also reduces fat storage and burns more already-stored fat. One study reported that subjects taking ATP for 14 days increased their 1-rep max and the number of reps they could complete with a weight to failure.

DOSAGE: 125-250mg twice daily on an empty stomach.

Agmatine

RATING: ★★★★★**CATEGORIES:** Mass Builder, Strength, Energy Production, Health

BENEFITS: This by-product of the breakdown of the amino acid arginine boosts nitric oxide (NO) levels and the release of insulin (an anabolic hormone that increases muscle growth and dilates blood vessels to further boost blood flow). Agmatine can increase training intensity and strength for stronger muscle contractions while blunting pain to help you do more reps. It can even help boost the anabolic hormones testosterone and growth hormone (GH) and provides an antioxidant benefit for recovery.

DOSAGE: 500-1,000mg 30-60 minutes before workouts.

Alpha-Glycerolphosphorylcholine (ALPHA-GPC)

RATING: ★★★★★**CATEGORIES:** Mass Builder, Mental Acuity, Health

BENEFITS: Derived from soy lecithin and a good source of choline, Alpha-GPC increases GH production by inhibiting a brain chemical that normally blocks it. One study reported that a single dose increased bench-press strength by 15%. It can enhance mental function by increasing acetylcholine production.

DOSAGE: 250-500mg one hour before workouts and before bed.

Alpha-Lipoic Acid (ALA)

RATING: ★★★★★**CATEGORIES:** Fat Loss, Health, Mass Builder

BENEFITS: A powerful antioxidant that also improves muscle glucose and creatine uptake when it's consumed with simple carbs like dextrose. ALA is included in some fat-loss products because it reduces the amount of insulin released when carbs are eaten, which increases fat burning and reduces hunger.

DOSAGE: For increased creatine uptake: 500-600mg with 2-5g of creatine; fat loss and antioxidant protection: 100-300mg two to three times per day.

Arginine

RATING: ★★★★★**CATEGORIES:** Mass Builder, Strength

BENEFITS: This amino acid enhances NO production, which improves blood flow to exercising muscles and delivers nutrients, hormones, and oxygen to aid in recovery. Arginine also boosts GH levels. Research shows significant strength improvements in men taking arginine products.

DOSAGE: 3-5g of arginine or NO products three times per day, with one dose 30-40 minutes before exercise.

Ashwagandha

RATING: ★★★★★**CATEGORIES:** Mass Builder, Health

BENEFITS: This herb, known scientifically as *Withania somnifera*, is a powerful antioxidant that helps to suppress free-radical production. In some studies, ashwagandha has increased testosterone levels by up to 40%.

DOSAGE: 1,500-2,000mg three times per day with food, with one dose 30-60 minutes before workouts.

Astaxanthin

RATING: ★★★★★**CATEGORIES:** Health, Energy Production, Fat Loss

BENEFITS: This carotenoid is a potent antioxidant that improves immune function, aids cardiovascular health, and protects the eyes from cataracts and macular degeneration. Research also shows that astaxanthin can increase endurance by up to 150%, thanks to its fat burning abilities.

DOSAGE: 4-6mg with meals once or twice per day, with one dose taken with your pre-workout shake.

Avena Sativa

RATING: ★★★★★**CATEGORY:** Mass Builder

BENEFITS: *Avena sativa* (the scientific name for oats) contains the active ingredient avenosides, which are a type of plant saponin similar to the furostanolic saponins in Tribulus. They increase the amount of luteinizing hormone (LH) released from the pituitary gland, which influences the testicles to produce more testosterone. Evidence suggests that the avenosides free up testosterone from its carrier protein, sex-hormonebinding globulin (SHBG), making more of it available to enter muscle cells to stimulate growth and boost strength gains.

DOSAGE: 100-300mg of a 10:1 Avena sativa extract 2-or-3 times per day, with one dose 30-60 minutes before workouts.

B

Banaba Leaf Extract

RATING: ★★★★★

CATEGORIES: Mass Builder, Health

BENEFITS: Used as traditional medicine in the Philippines to treat diabetes and kidney diseases, the leaves appear to act in a similar manner to insulin by activating insulin receptors. One of the main ingredients responsible for this action is corosolic acid.

DOSAGE: 30-50mg banaba leaf extract standardized for corosolic acid with your post-workout shake.

Beta-Alanine

RATING: ★★★★★

CATEGORIES: Strength, Mass Builder, Energy Production

BENEFITS: In the body, [beta-alanine](#) combines with another amino acid, histidine, to form the dipeptide (two aminos bound together) known as carnosine, also a component of vitamin B3. Research shows that muscles with higher levels of carnosine can generate greater forceful contractions for a longer period, resulting in superior strength, endurance, and mass gains. In one study, subjects taking beta-alanine with creatine gained more muscle and lost more fat than subjects taking just creatine.

DOSAGE: 2-3g with your pre- and postworkout shakes.

Beta-Carotene

RATING: ★★★★★

CATEGORY: Health

BENEFITS: This phytonutrient-with antioxidant and provitamin A activity-provides a nontoxic source of [vitamin A](#). It also works with other natural protectors to defend cells from free radicals, and it aids metabolic functions, such as recovery from exercise.

DOSAGE: 5,000-25,000 international units (IU) per day with fat-containing meals.



Beta-Ecdysterone

RATING: ★★★★★

CATEGORIES: Strength, Mass Builder

BENEFITS: [Beta-ecdysterone](#), a phytochemical found in plants such as spinach, stimulates protein synthesis and drives muscle growth with no impact on hormone levels.

DOSAGE: 100mg with meals, including before and after workouts, for a total of 400-500mg daily.

Betaine

RATING: ★★★★★

CATEGORY: Health

BENEFITS: This unique amino acid (also called trimethylglycine) derived from beets aids joint and liver repair, joint building, and liver protection. Studies show that it boosts strength and power, increases growth hormone and insulin-like growth factor-1 (IGF-1) levels, and even acts like the body's own production of creatine. Research suggests that it may also support faster recovery from injury and inflammation.

DOSAGE: 1,500-3,000mg with pre- and post-workout meals

Beta-Phenylethylamine

RATING: ★★★★★

CATEGORY: Fat Loss

BENEFITS: Also called phenylethylamine (PEA), this naturally occurring metabolite of the amino acid phenylalanine is a stimulatory transmitter in the body that enhances neurotransmission. It promotes fat burning by increasing the release of norepinephrine, which raises dopamine and serotonin levels in the brain, thereby reducing the sensation of pain and boosting feelings of euphoria to help bodybuilders tolerate the rigors of contest dieting. It's also available as beta-methoxyphenylethylamine, a form that significantly enhances its half-life in the body and allows a single dose to be more effective.

DOSAGE: 100-500mg one or two times daily.

Bioperine (Piperine)

RATING: ★★★★★☆**CATEGORY:** Health

BENEFITS: Piperine is an active extract derived from black or long pepper. Research suggests it enhances nutrient absorption, most likely by increasing blood flow to the digestive tract. In one study, taking vitamin B6 along with Bioperine-branded piperine more than doubled the amount of B6 found in the blood of healthy men two hours after ingestion.

DOSAGE: 5mg daily with food.



Bovine Colostrum

RATING: ★★★★★☆**CATEGORY:** Mass Builder

BENEFITS: Large doses of [bovine colostrum](#)-the first milk produced by cows during the initial days after giving birth-have been shown to improve immune function and increase levels of IGF-1. In addition, research indicates that it may aid muscular endurance. Gram per gram, the protein in colostrum is a bit more anabolic than that found in whey or other protein powders like casein or egg protein.

DOSAGE: Replace 5-10g of protein in your pre- and post-workout shakes with 5-10g of bovine colostrum.

Branched-Chain Amino Acids (BCAAs)

RATING: ★★★★★★**CATEGORIES:** Mass Builder, Energy Production, Fat Loss

BENEFITS: [BCAAs](#) include the essential amino acids leucine, isoleucine, and valine, the most important aminos for the manufacture, maintenance, and repair of muscle tissue. Research shows that of the three, leucine can stimulate protein synthesis (the process of building muscle protein and, therefore, growth). Yet, the three work better together to provide a host of benefits and even boost energy during training. Studies show BCAAs can blunt the catabolic hormone cortisol and decrease delayed-onset muscle soreness.

DOSAGE: 5-10g with a whey shake in the morning, as well as with your pre- and post-workout shakes.



Caffeine

RATING: ★★★★★★**CATEGORIES:** Fat Loss, Energy Production, Mental Acuity, Strength, Health

BENEFITS: A stimulant and effective fat burner due to its ability to increase the release of fat from fat cells, caffeine has been shown to boost strength and power output when taken one hour before workouts. New studies show it may help prevent several neurodegenerative and cardiovascular diseases, too.

DOSAGE: For fat loss and weight management: 100-200mg between meals; mental acuity and focus: 50-200mg every couple of hours; strength and power: 200-400mg one hour before workouts.



Calcium

RATING: ★★★★★★**CATEGORIES:** Fat Loss, Energy Production, Health

BENEFITS: Essential for growth of the musculoskeletal system, [calcium](#) also regulates and is critical for the contraction and relaxation of muscle tissue. In addition, it can help burn body fat by promoting thermogenesis and reducing dietary fat absorption.

DOSAGE: 500-600mg two or three times per day.

Capsaicin

RATING: ★★★★★☆**CATEGORIES:** Fat Loss, Health

BENEFITS: The chemical in chili peppers that makes them spicy, capsaicin enhances fat loss by first raising levels of the neurohormone norepinephrine, which increases metabolic rate. It has been found to elevate fat burning when taken an hour before aerobic exercise and can also decrease hunger. Look for capsaicin supplements that list Scoville thermal units, or heat units, with a dosage that supplies 40,000-80,000 units. You can also take 1/4 tsp of ground red pepper or cayenne pepper that lists the heat units.

DOSAGE: 40,000-80,000 units 30 minutes before meals and one hour before cardio.

Carnitine

RATING: ★★★★★☆**CATEGORIES:** Fat Loss, Mass Builder

BENEFITS: Carnitine aids the transport of fats into the machinery of muscle cells (mitochondria), where it's burned for fuel. Research shows it improves fat loss during exercise and low-carb dieting. Carnitine also appears to enhance recovery following intense lifting and increases the number of testosterone receptors in muscle cells, thereby aiding growth. Further evidence points to carnitine as a potent NO booster, which means more blood flow and enhanced nutrient, oxygen, and anabolic hormone delivery to muscles.

DOSAGE: 1,000-3,000mg in the form of L-carnitine, acetyl-L-carnitine, L-carnitine- L-tartrate (see also glycine propionyl-L-carnitine); you can also take another dose with meals in the morning and with evening meals.

Carnosine

RATING: ★★★★★☆**CATEGORIES:** Strength, Mass Builder

BENEFITS: Carnosine is what beta-alanine forms in muscle cells when it combines with histidine. So why do most supplements use beta-alanine and not carnosine? Because when you consume carnosine, it gets broken down in the digestive tract to beta-alanine and histidine. However, some supplements do provide carnosine. Carnosine and beta-alanine, are both effective for boosting strength, power and size.

DOSAGE: 2-3g with your pre- and postworkout. shakes

Chitosan

RATING: ★★★★★☆**CATEGORY:** Fat Loss

BENEFITS: Chitosan is a charged protein derived from chitin that attracts, binds and removes fat from the digestive system before it can be absorbed by the body. One study reported that those taking chitosan without dieting lost about three pounds more body fat than subjects taking a placebo.

DOSAGE: 2g before high-fat meals.

Casein Protein

RATING: ★★★★★★**CATEGORY:** Mass Builder

BENEFITS: A fraction of milk protein, casein provides a steady stream of amino acids over a longer period of time (during sleep, for example) in comparison to whey protein, the soluble protein fraction in milk. Research shows that those adding casein to a post-workout whey shake gained more muscle than those taking whey without casein.

DOSAGE: 20-40g between meals and/or before bedtime. Also consider replacing 10-20g of whey in your post-workout shake with casein.



Chlorophyll

RATING: ★★★★★☆**CATEGORIES:** Health, Energy Production

BENEFITS: Chlorophyll is a group of green pigments that absorbs light for photosynthesis, which sustains plant life through the conversion of sunlight into chemical energy. It provides numerous benefits to humans, too, mainly due to its antioxidant and antiinflammatory effects. Research shows that daily use can decrease DNA damage by more than 50%, which also helps with muscle recovery. Chlorophyll may even help to boost endurance by aiding the oxygen delivery to muscles and may protect against certain cancers and even halitosis.

DOSAGE: 100mg two or three times per day.

Chocamine

RATING: ★★★★★☆**CATEGORIES:** Fat Loss, Energy Production, Mental Acuity, Health

BENEFITS: An extract from cocoa that provides all the benefits of chocolate without the sugar or fat, chocamine contains a number of active ingredients that help suppress appetite and enhance metabolism, including caffeine, tyramine, theobromine, and phenylethylamine. These components also boost energy and improve mood, concentration, and alertness.

DOSAGE: 1-2g up to three times per day.

Chondroitin

RATING: ★★★★★☆**CATEGORY:** Health

BENEFITS: Some manufacturers combine chondroitin with glucosamine or other ingredients that can have a synergistic effect on joint health. As with glucosamine, chondroitin can help ease arthritis symptoms and may also protect joints from destructive enzymes. It can take up to three months of continuous use before effects are noticeable.

DOSAGE: 800-1,500mg of chondroitin sulfate or chondroitin hydrochloride daily in two or three divided doses.

Chromium

RATING: ★★☆☆☆**CATEGORIES:** Fat Loss, Mass Builder

BENEFITS: Chromium is essential for helping the body maintain optimal insulin function, which is important for staying lean and building muscle. Research has also shown that it can significantly reduce carb cravings, enhance fat loss, and lower cortisol levels. Chromium is easily depleted in those individuals restricting calories and/or training intensely.

DOSAGE: 200-400 micrograms (mcg) of chromium picolinate or chromium nicotinate per day with meals.

Chrysin

RATING: ★★★★★**CATEGORIES:** Mass Builder, Strength

BENEFITS: Chrysin (also known as 5, 7-dihydroxyflavone) is a flavonoid compound that inhibits the aromatase enzyme that converts testosterone into estrogen. More recent research from Texas Tech University, in Lubbock, finds that it can also directly increase testosterone production by enhancing the testis' ability to convert cholesterol into steroid hormones such as testosterone.

DOSAGE: 1g with breakfast, lunch, and the last meal of the day.

Cinnamon Extract

RATING: ★★☆☆☆**CATEGORIES:** Health, Fat Loss, Mass Builder

BENEFITS: Cinnamon contains the active component hydroxychalcone, which imitates the effects of insulin—a powerful anabolic hormone that drives carbohydrates and amino acids into muscle cells—and allows better binding to insulin receptors on muscle cells. With more of the carbs being pushed into the muscle fibers, it is less likely that those carbs will be stored as body fat. In addition, insulin acts like a key in muscle cells to directly turn on the process known as muscle protein synthesis, which boosts growth.

DOSAGE: 100-250mg with meals daily.



Citrulline/Citrulline Malate

RATING: ★★☆☆☆**CATEGORIES:** Energy Production, Mass Builder

BENEFITS: This amino acid is closely related to arginine and is readily converted to arginine in the body. Research shows that taking citrulline increases arginine and NO levels in the blood better than taking arginine by itself. It also helps prevent muscle fatigue by aiding in the removal of ammonia from the body, reabsorbing lactate for increased ATP resynthesis during high-intensity workouts, and boosting muscle protein synthesis via direct anabolic signaling. Citrulline malate elevates muscle ATP by 35% during exercise and increases the rate of creatine phosphate resynthesis by 20%.

DOSAGE: 3-6g of L-citrulline or citrulline malate 30-60 minutes before workouts.

Collagen Hydrolysate/Gelatin

RATING: ★★☆☆☆**CATEGORY:** Health

BENEFITS: Collagen hydrolysate is a protein that helps regenerate and synthesize cartilage. One study on osteoarthritis patients reported that those taking collagen had significant pain reduction and could reduce their use of nonsteroidal anti-inflammatory drugs. Collagen hydrolysate also stimulates the synthesis of type II collagen in cartilage.

DOSAGE: 10g per day, taken for at least three months.

Conjugated Linoleic Acid (CLA)

RATING: ★★☆☆☆**CATEGORIES:** Fat Loss, Mass Builder, Health

BENEFITS: This fatty acid found in meats and dairy products can help incinerate body fat while simultaneously increasing muscle mass and strength. CLA also assists in reducing the risk for certain cancers. You must supplement for at least 12 weeks for effects to be noticeable, and CLA appears to be most effective when consumed as part of a low-calorie or low-fat diet. Look for cis-9, tran-11 and/or tran-10, or cis-12 on the label.

DOSAGE: 1-3g with breakfast, lunch, and dinner.

Coenzyme Q10 (CoQ10)

RATING: ★★☆☆☆**CATEGORIES:** Energy Production, Health

BENEFITS: CoQ10 is involved in all oxygenutilizing (aerobic) metabolic reactions within the body and helps muscle cells convert energy. Research supports its use in controlling blood pressure and preventing heart disease by reducing LDL (bad) cholesterol. Training generates muscle-damaging free radicals, which CoQ10 helps neutralize; it's also used to turn carbs and fat into energy. One study found that supplementing with 300mg of CoQ10 daily for eight days reduced fatigue during exercise and sped up recovery between bouts of exercise. As an antioxidant, CoQ10 regenerates the antioxidant power of vitamins C and E.

DOSAGE: 300mg per day with meals.

Creatine

RATING: ★★★★★**CATEGORIES:** Mass Builder, Strength, Energy Production, Health

BENEFITS: Made from the three aminos arginine, glycine, and methionine, creatine is technically an amino-acid supplement, not an individual amino. [Creatine](#) boosts lean muscle mass gains by about 10 pounds and strength by about 10% in just a few weeks, even in highly trained lifters. It also helps bolster levels of creatine phosphate, which in turn boosts ATP production, the ultimate energy source for muscles.

DOSAGE: Depending on the form of creatine you use, take about 2-5g with your pre- and post-workout protein shakes.



Curcumin

RATING: ★★★★★☆**CATEGORY:** Health

BENEFITS: This active ingredient in the [spice turmeric](#) not only protects you from cancer and heart disease but has also been shown to relieve the pain and inflammation associated with healing from surgery and arthritis. Research has also shown that it can significantly reduce cartilage destruction by inhibiting chemicals that instigate inflammation in the body.

DOSAGE: 200-500mg of turmeric extract standardized for at least 85% curcumin, two or three times per day.



D-Aspartate

RATING: ★★★★★☆**CATEGORIES:** Mass Builder, Strength

BENEFITS: This amino acid is produced in the pituitary gland, where it stimulates the release of LH. Then, LH travels via the bloodstream to the testicles where it causes a boost in testosterone production. [D-aspartate](#) is also produced inside the testicles and acts on Leydig cells (special cells in the testicles that produce testosterone) to increase T production as well as the production of sperm. One study reported that men taking D-aspartate for just 12 days increased their testosterone levels by more than 40%.

DOSAGE: 3g in the morning.

Damiana

RATING: ★★★★★☆**CATEGORIES:** Mass Builder, Strength

BENEFITS: This shrub, also known as *Turnera diffusa*, has been used for centuries as a sex booster. However, it wasn't until recently that damiana leaf extract was shown to inhibit the aromatase enzyme, which converts testosterone into estrogen in the body. The active ingredients in damiana, called pinocembrin and acacetin, were mainly responsible for this effect.

DOSAGE: 50-500mg of damiana extract three times per day in between meals.

Dehydroepiandrosterone (DHEA)

RATING: ★★★★★☆**CATEGORIES:** Mass Builder, Strength, Fat Loss, Health

BENEFITS: Produced by the adrenal glands, the hormone [DHEA](#) supports insulin function, increases bone density, promotes mental health, and, of course, works as a precursor for testosterone. Research has found that it helps reduce body fat, particularly from the midsection; it also increases levels of IGF-1, an anabolic factor critical for muscle growth. DHEA levels can start to decline in the early 20s in males who train intensely.

DOSAGE: 25-100mg once or twice daily.

Digestive Enzymes

RATING: ★★★★★☆**CATEGORIES:** Health, Mass Builder

BENEFITS: Enzymes are proteins that act as catalysts, enabling metabolic processes to occur at lightning speed. They also break down the macronutrients-protein, carbs, and fat. Of major importance to the bodybuilder are the protease enzymes that break down protein. Research shows they can also help [accelerate muscle recovery](#) after workouts as well as reduce swelling and speed the healing of certain injuries. Choose an enzyme formula that contains some or all of the following: trypsin, chymotrypsin, pepsin, pancreatic enzymes, bromelain and papain.

DOSAGE: 250-500mg 15 minutes before meals.

Diindole/Diindolylmethane (DIM)

RATING: ★★☆☆☆**CATEGORY:** Mass Builder**BENEFITS:** [Diindole](#) can help neutralize the negative effects of high estrogen levels, helping to keep testosterone levels up without aromatization (the process in which testosterone is converted to estrogen, which leads to excess water and fat retention). Taking DIM with vitamin E can increase its absorption.**DOSAGE:** 200-300mg in two or three divided doses.

Dimethylaminoethanol (DMAE)

RATING: ★★☆☆☆**CATEGORY:** Mental Acuity**BENEFITS:** DMAE was originally marketed in the 1960s as a prescription drug to enhance learning and memory in individuals with attention disorders. Research shows that it leads to higher choline levels in the brain than taking choline by itself. This effect seems to be due to the fact that DMAE inhibits the breakdown of choline, which should lead to higher acetylcholine levels and, thus, better mental function.**DOSAGE:** 100-200mg once or twice a day.

Echinacea

RATING: ★★★★★**CATEGORY:** Health**BENEFITS:** Well known for its immunoprotective properties, this herb has been shown to offer some defense against colds and the flu and can be used to protect the immune system from the stress caused by heavy training. It may also boost the appetite, which can be critical in mass-gaining phases. Some research even suggests that echinacea increases production of oxygen-carrying red blood cells, which could enhance endurance. Look for products that contain Echinacea purpurea standardized to 4% sesquiterpene esters, or Echinacea angustifolia standardized to 4% echinacosides.**DOSAGE:** 200-400mg two to four times per day during flu season or at the onset of a cold. To stimulate appetite, take 400-500mg before meals. It is best to cycle this supplement in periods of three weeks on and one week off.

Egg Protein

RATING: ★★★★★**CATEGORY:** Mass Builder**BENEFITS:** Also known as egg albumen, this is an effective source of protein that's well tolerated by many people, including those who are lactose-intolerant. With a high content of BCAAs, which can help drive muscle protein synthesis and hypertrophy, it stimulates protein synthesis similar to milk protein. It's also rich in the amino acid arginine, which triggers NO production. [Egg white protein](#) is a high-sulfur-containing protein, which is crucial to the body's hormone-producing pathways, meaning it can further enhance growth.**DOSAGE:** 20-50g between meals or 10-20g added to your pre- and post-workout shakes.

Elderberry Extract

RATING: ★★★★★**CATEGORY:** Health**BENEFITS:** Elderberry extract comes from the fruit of the Sambucus plant, a genus of up to 30 species of shrubs. One study reported that phytochemicals in elderberry directly bind to the H1N1 virus and block its ability to enter cells, which is critical for its infectious effects. And if you do contract the flu, research shows that taking elderberry extract can reduce the duration by half.**DOSAGE:** 2-4g four times per day.

Eurycoma Longifolia Jack

RATING: ★★☆☆☆**CATEGORIES:** Mass Builder, Strength, Health**BENEFITS:** This rainforest plant, also known as Malaysian ginseng or tongkat ali, appears to directly enhance testosterone production by stimulating the Leydig cells-special cells that convert cholesterol into testosterone-in the testes. It may also free up testosterone in the blood. Testosterone normally circulates in the blood, bound to the carrier protein called SHBG. This protein extends the time testosterone stays in the blood but prevents it from entering muscle cells. [E. longifolia Jack](#) is believed to help release testosterone from SHBG so that more of it can enter muscle cells to induce growth. Look for products that provide a 20:1 extract of E. longifolia Jack.**DOSAGE:** 200-300mg two or three times per day.

Evodiamine

RATING: ★★★★★☆

CATEGORY: Fat Loss

BENEFITS: This extract from the *Evodia rutaecarpa* fruit burns fat by stimulating specific receptors in the central nervous system that boost metabolic rate.

Evodiamine also reduces hunger and slows the digestion of food, which not only keeps you feeling fuller longer but also causes a slow and steady release of glucose into the bloodstream, helping prevent insulin spikes that could lead to greater fat storage.

DOSAGE: 30-50mg two or three times per day.



Fenugreek

RATING: ★★★★★☆

CATEGORIES: Mass Builder, Strength, Fat Loss, Health

BENEFITS: This herb has myriad health benefits, the most notable being increased insulin release due to its high concentration of a BCAA isomer, 4-hydroxyisoleucine. **Fenugreek** can also elevate testosterone levels as a result of its high content of furostanolic saponins, which increase LH levels to stimulate testosterone production.

DOSAGE: 500-2,000mg per day of furostanolic saponins from fenugreek, or the equivalent of at least 1mg of 4-hydroxyisoleucine per pound of body weight with your post-workout shake to rapidly restore muscle glycogen.

Fiber

RATING: ★★★★★☆

CATEGORIES: Health, Fat Loss

BENEFITS: Fiber is an indigestible complex carbohydrate. Consumption of soluble and insoluble fiber enhances the health of the digestive tract and improves the absorption and efficiency of bodybuilding diets. Fiber increases the bulk of food consumed, helping to process it. You should consume about 10-15g of fiber for every 1,000 calories eaten from food or supplements.

DOSAGE: 3-5g of fiber from supplements before large meals to help slow digestion, up to three times per day.

Fish Oil

RATING: ★★★★★★

CATEGORIES: Health, Fat Loss, Mass Builder, Strength

BENEFITS: Fish oil contains the essential omega-3 fatty acids eicosapentaenoic acid (Energy ProductionA) and docosahexaenoic acid (DHA). These fatty acids appear to reduce the risk of heart disease and stroke, as well as prevent muscle breakdown, enhance joint healing, improve brain function, and help achieve greater fat loss.

DOSAGE: 1-3g with meals two or three times per day.



5-Hydroxytryptophan (5-HTP)

RATING: ★★★★★☆

CATEGORIES: Fat Loss, Mental Acuity, Health

BENEFITS: This modified amino acid is what the essential amino tryptophan is converted to before it forms serotonin and melatonin in the body. In men, **5-HTP** has been shown to increase LH and gonadotropin-releasing hormone to boost testosterone levels. Serotonin can help curb food cravings-especially for carbohydrates-and melatonin can help you relax before bed. All this makes 5-HTP great to take at night to promote adrenal recovery and ease food cravings when they seem to be strongest. In one study, subjects taking 5-HTP ate fewer calories per day and lost an average of 11 pounds in 12 weeks, while a placebo group had difficulty limiting caloric intake and lost only two pounds.

DOSAGE: 50-1,300mg 30-60 minutes before bed. (those taking prescribed antidepressants should not use 5-HTP before discussing it with a physician)

Flaxseed Oil

RATING: ★★★★★☆

CATEGORIES: Fat Loss, Health, Mass Builder

BENEFITS: Flaxseed oil is an excellent source of alpha-linolenic acid, which the body can convert to the omega-3 fatty acids Energy ProductionA and DHA (see "Fish Oil"), and it has potent antiinflammatory properties. If on a low-fat diet, men should limit the amount of flaxseed oil consumed to 30g per day; when combined with a diet low in fat, it has been shown to reduce testosterone in men by 15% within 30 days.

DOSAGE: 1-2 tbsp per day with food.

Folic Acid

RATING: ★★★★★☆

CATEGORIES: Health, Mass Builder

BENEFITS: Also known as [folate](#), this B vitamin is critical for the production and maintenance of new cells (such as muscle cells); it's also needed to make DNA and RNA, the building blocks of all cells. Folate even plays a role in the conversion of arginine to NO. It also regulates the co-factors that directly influence the amount of arginine that can be converted to NO, resulting in greater NO production.

DOSAGE: 400-800mcg in the form of folic acid or L-methylfolate.



Forskolin

RATING: ★★★★★☆

CATEGORIES: Fat Loss, Mass Builder

BENEFITS: [Forskolin](#) is the active compound in the herb Coleus forskohlii, a member of the mint family. It enhances fat loss by activating the enzyme adenylate cyclase, which is also involved in testosterone production. This leads to activation of the hormone-sensitive lipoprotein lipase, which allows fat stored in fat cells to be broken down for use as fuel. Research found that overweight men who took forskolin for 12 weeks lost considerably more body fat and had higher levels of testosterone than a placebo group.

DOSAGE: Take a Coleus forskohlii supplement standardized for 20-50mg forskolin, two or three times daily before meals.

Fucoxanthin

RATING: ★★★★★☆

CATEGORY: Fat Loss

BENEFITS: This carotenoid increases the activity of uncoupling proteins in fat cells, which increases the activity of the metabolic machinery in cells and makes them burn more fuel to produce adequate energy. In other words, you burn more calories, such as fat, each day. Research shows that lab animals given fucoxanthin lost significantly more abdominal fat than animals receiving a placebo. Look for products that contain fucoxanthin extract like the trademarked form Xanthigen.

DOSAGE: 150-200mg two or three times per day before meals.

ABOUT THE AUTHOR

Flex Magazine



Founded in 1983, Flex Magazine offers training and diet tips, pro athlete profiles, and contest coverage.

[View All Articles By This Author](#)

44 COMMENTS

[Log in to comment](#)

Please keep comments positive and constructive.

Help the community by reporting inappropriate comments. Inappropriate comments may be reported and/or removed.

Please log in to comment.

POST COMMENT



Free Shipping On Orders \$75+ US Only [Learn More](#)

Nutrition

Ask The Doc: Expert Answers To Your Nutrition And Supplement Questions

FLEX Flex Magazine
 April 11, 2019 • 12 min read

We collected online questions and FLEX Senior Science Editor Jim Stoppani answered them so you can get the most out of your training.

You hit the gym religiously, pushing yourself to train harder, longer and heavier than the last time, because that's the price of progress.

Skipping a single second of cardio is a sin, so instead of whining you just do it. The payoff for your sacrifice and dedication?

A big, ripped physique...but (and this is a huge but) only if your meal and supplementation plan is on point. Without the right nutrients, most of your gym efforts will be wasted.

So what are the key nutrients? How much do you need and when is the best time to take them? We collected online questions and FLEX Senior Science Editor [Jim Stoppani](#) answered them so you can get the most out of your training.

We'll cover a lot of territory, but if we miss something that you absolutely need to know, it's as easy as dropping the Doc a line at facebook.com/flexmagazine.

Q: I was wondering if you had any tips for bulking up on a budget. What supplements, besides creatine, are absolutely necessary but won't break the bank? Also, how necessary are supplements with respect to making the huge gains that are claimed, and how safe are they? Do the long-term effects outweigh (no pun intended) the short-term gains that they provide?

Supplements are very effective for promoting muscle gains. The most critical would be:



Whey Protein

Since it is so fast-digesting it aids muscle growth around workouts.



Multivitamin

To help cover all your micronutrient bases.



Creatine

Which is fairly cheap and very effective.

**Branched-Chain Amino Acids**

They may help promote muscle growth.

Q: Should I be cycling my supplements? If I am on them for an extended period of time, will they stop being as effective? If so, what would be a good cycle?

There really is no need to cycle supplements. They are nutrients that are found in the food we eat, so you wouldn't be able to truly cycle off of them anyway.

There was once a belief that the receptors in muscle cells would "burn out" and not be so effective at taking nutrients into the muscle. This is more hyperbole than fact.

That said, you certainly can cycle off of these supplements for financial reasons if you want to give your wallet a break. One study found that men taking creatine who stopped for four weeks lost no muscle mass or strength.

So it is possible to stop some supplements for a while with little detriment to your physique or your performance and then go back on. Just limit the "off" cycle to four weeks or less.

Q: I just got my hands on some beta-alanine. I was wondering if the tingling sensations and the flushing of the skin were normal in all brands. It doesn't hurt, but it does feel funny.

Yes, that is normal. It's known as paresthesia and is caused by [beta-alanine](#) binding to nerve receptors, which causes the nerves that are below the skin to fire.

This sensation is enhanced when taking beta-alanine along with [caffeine](#), which is in many [pre-workout formulas](#). It does go away with continued use.

Q: What is the proper intake of proteins per meal? Is it true that the body can absorb 30 grams per meal? Is there such a thing as too much protein? I see some people eating 80g of protein per meal.

You should shoot for about 30-40g of [protein](#) per meal. How much protein a body can absorb depends on the individual and what they have eaten prior to that meal.

Q: I'm trying to gain mass but I work out in the morning, so my pre-workout nutrition is hard to get in. I know that I should take my nitric oxide booster on an empty stomach, but how do I also get in my protein shake and carbs?

Take your [NO booster](#) as soon as you wake up. Then, 30 minutes later, drink a protein shake with about 20g of [whey](#). Also, have about 20-40g of carbs from fruit to help stop the catabolism from your night of sleep and to fuel your workout.

Q: I've heard a lot about carb cycling - what is it? Why should I do it? What is an example of carb-cycling for a 200-pound guy?

Carb cycling refers to alternating periods of low- and high-carb intake, maximizing both fat loss and muscle growth. For fat loss, your default diet would be somewhat under 1g of carbs per pound of bodyweight. You would cycle in a high-carb day (greater than 2g per pound) every five to seven days.

Since carb-restricted diets can lower your metabolic rate by decreasing leptin levels, the high-carb day helps to reset your leptin levels and keep your metabolic rate up.

To add size, your default diet would be 2-3g per pound. You can go lower, either to about 1g per pound on non-training days, or you can have two low-carb days after every three or four high-carb days to minimize fat gain.

\$ Some tips for keeping your spending down:

- Buy big — the larger the container, the more you pay upfront, the cheaper the supplement will be per serving.
- Keep it simple — creatine in the form of creatine monohydrate is cheap and effective.
- Have no taste — if you buy flavored BCAAs or creatine, chances are you are paying for the taste. Flavorless powders tend to be cheaper.

Q: I am a hardgainer and I feel bloated a lot of the time and don't have much definition or muscle hardness. I believe I have gained water weight and not fat. Do you recommend using a diuretic? I heard that diuretics can result in loss of strength and muscle. Also, I slack off on breakfast and was wondering if taking a weight-gainer shake in the morning would help me.

A natural [diuretic](#) won't fix the issue. Water weight tends to be a transient thing. If it's chronic, make sure you are not consuming excessive amounts of sodium. Although we don't typically recommend cutting back on sodium, you may be more sensitive to sodium than most.

In that case, if you are getting in more than 4,000 milligrams per day, consider cutting back. High sodium culprits include deli meats and other cured meats, and canned and packaged foods. Certain medical conditions can also cause water retention. So if you think the water weight is a bit excessive, see your doctor.

I only recommend weight-gainers for those who are really on the thin side and have difficulty adding weight. I would suggest a [meal replacement shake](#) for breakfast.

Q: I work out late at night and have a postworkout whey shake right after training and, one hour later, a casein shake before bed. Although I am trying to gain mass, I avoid postworkout carbs because I don't want to gain any fat. How do I take ZMA before bed? There is no real time when I can take ZMA on an empty stomach.

Since you finish your workout so close to bedtime, you can combine 20g each of [whey](#) and [casein](#) into one [post-workout shake](#). I would also suggest having some fast-digesting carbs at this time.

Insulin sensitivity is lower at night and I typically recommend avoiding carbs, but since you have worked out, any carbs you consume at this time, regardless of how late it is, will be used for [recovery](#) and to boost muscle growth - without adding body fat. One hour after your post-workout meal, take your [ZMA](#) and hit the hay.



Q: Do you have any tips for getting rid of that last inch around the belly? HIIT cardio and weightlifting have left me with just a little bit more to lose.

That last inch is the toughest. The only way to get rid of it is to burn even more calories than you consume. So to consume even fewer calories, consider dropping some extra carbs from your diet, such as at your pre-workout meal and/or lunch.

To burn more calories, consider turning up your [high-intensity interval training](#) by going for a few more intervals each time.

Q: Does alcohol interfere with fat loss?

Yes, [alcohol](#) can aid fat gain. It does this by increasing the production of a metabolite in the body that creates more fat. Alcohol also can blunt muscle growth by decreasing [testosterone](#).

Plus, it messes up your [sleep](#), causing you to release less [growth hormone](#), and GH is not only important for muscle growth but also encourages fat loss.

Q: As I am getting older, I find it harder to lose the fat that I gain during pure mass phases. I heard it was not possible to build muscle and lose fat at the same time. Is that true?

Most trainers will tell you that you can't build muscle while losing fat, but that is not entirely true. It's just that when you're doing both concurrently, you won't maximize results for either. But who wants to gain fat on purpose, anyway?

The best way to build muscle while keeping fat off is to keep protein high and carbs low most of the time, and cycle in a few high-carb days per week. Whether you are on a low-carb day or a high-carb day, keep protein at 1.5-2g per pound of bodyweight.

Q: I do cardio right after weights. Should I have my postworkout shake and carbs before cardio or after? If I wait until after cardio, will I miss my postworkout window to stimulate muscle growth?

You should wait until immediately after the [cardio](#) is over to consume your protein and fast carbs. This is especially true for the carbs, which would blunt [fat burning](#) during the cardio workout. Don't be worried about missing your post-workout window . . . as long as you prepared properly with a pre-workout protein shake.

The pre-workout protein shake provides energy during the workout and also serves as a post-workout protein source to stimulate muscle protein synthesis.

Q: I was thinking of loading glutamine, protein and creatine in my morning pre- and post-workout shakes with fruit juice and greens. Is it true that you can't mix creatine in fruit juice?

You actually can mix [creatine](#) with fruit juice - and for pre-workout, it is fine. But fruit juice doesn't spike insulin like faster-digesting carbs, and creatine needs help from insulin to get into muscle cells.

So don't use fruit juice post-workout, as this is when you definitely want to spike insulin for muscle recovery and growth.

Q: What are the benefits of HMB? If I decide to take it, how many capsules a day would you recommend for a first-time user? Pre- or postworkout, or both?

Beta-hydroxy-beta-methylbutyrate is a metabolite of the branched-chain amino acid [leucine](#). It may help provide support against muscle breakdown and promotes muscle growth. Although HMB has been suggested to be more effective in beginner lifters and less effective in trained lifters, I have found that it is effective for trained lifters who work out very intensely and take a high dose.

I think the reason that studies on trained lifters saw poor results with [HMB](#) was that the training was not intense enough to require the need for HMB and the dose was not high enough. You need to take 1-3g of HMB with food in the morning, before and after workouts and before bed.

Q: Are extra amino acids a waste of time? Will I really see a difference?

As a whole, they are the most critical amino acids to take. Researchers from the University of Texas Medical Branch (Galveston) found that leucine (the key branched-chain amino acid) is crucial for kick-starting the muscle growth process. [Leucine](#) is one of three [BCAAs](#).

In a study that I conducted with colleagues from the College of Charleston (South Carolina), our research suggests that trained bodybuilders taking additional BCAAs gained more than twice the strength and muscle mass - and lost more than twice as much bodyfat - as those not taking them.

Q: When is the best time to take L-arginine - before a workout or before going to sleep?

[Arginine](#) is best taken without food. I suggest 3-5g first thing in the morning before eating, 30-60 minutes before workouts and 30-60 minutes before bed.

Q: I've been doing 20 minutes of high-intensity interval training four or five days a week after my weightlifting sessions. I'm on a reduced-carb diet and my legs are starting to lose all their energy. Should I switch to a more moderate intensity? I'm afraid I may be starting to lose some muscle.

That's common when doing HIIT on low carbs. The good news is that when your legs fatigue like that, it's a sure sign that you are burning major body fat. When you are losing bodyfat, you will lose overall size, but not necessarily muscle. That's why it's good to have your [bodyfat tested](#) before you start a diet to know what you are losing.

If you think you are losing muscle, be sure that your protein intake is about 1.5g per pound of bodyweight, and consider adding one high-carb day per week. Also consider supplementing with [creatine](#) and [beta-alanine](#) for the stop-and-go energy you need for HIIT.



Q: I read that cyclic ketogenic diets are effective at dropping body fat and preserving hard-earned muscle mass. Is CKD relatively safe? How can I get into the ketogenic state quickly? Will vegetables and almonds/peanut butter consumption upset the ketogenic state? I also read that protein has a 58% conversion rate to glucose. Does that mean that I must be strict with my protein consumption?

Yes, going ketogenic is very safe. But you don't need to be so strict that you eat no carbs and worry about nuts and vegetables. Also, do not restrict your protein (in fact, increase it) if you do not want to lose muscle.

Just keep your carbs very low by eating only animal protein and a serving of vegetables at every meal. Nuts and peanut butter are fine, too, in moderation. Keep reps high (12-20) and rest low (30 seconds) between sets to burn up the most muscle glycogen. Also, add HIIT cardio to your regimen.

Q: Is it OK to add a scoop of protein to nitric oxide before my workout?

Keep your **NO product** separate from your protein powder by 30-60 minutes. The arginine in most NO boosters is poorly absorbed by the intestines when other **amino acids** are around - you won't absorb adequate amounts to raise NO levels.

If you must combine the two for convenience, look for NO boosters that use **citrulline** or GPLC instead of **arginine**, as absorption of these ingredients won't be compromised when you take protein with them.

Q: If I'm taking creatine, do I need to do the loading phase first? What is a typical loading phase?

You only need a loading phase if you want to see immediate results. A good loading phase should last five to seven days. Take 5g of **creatine** four or five times per day. Definitely take creatine with protein and carbs, and on workout days make one of those doses with your pre-workout shake and carbs, and another one immediately post-workout with your shake and carbs.

Q: When reading labels, how do I know if the carbs in the item are fast- or slow-digesting? When the label says it has 16g of fat per serving but then says it has only 4g of saturated fats and 0g of trans fats, does that automatically mean the rest are poly- and monounsaturated fats?

The packaging of a food that is a slow-digesting carb should name one of these ingredients first on the list:

- whole grain
- whole wheat
- whole (other grain)
- stone-ground whole (grain)
- brown rice

- oats
- oatmeal
- wheat berries

Also, the Whole Grains Council has developed the Whole Grain Stamp, which appears on products that contain at least half a serving (8g) of whole grains per serving.

Products with a full serving (16g) of whole grains get the "100% Whole Grain" banner, to boot. Regarding fats, yes, the remainder would be poly- and monounsaturated.

Q: I take 40-45g of protein and 5g of creatine in my post-workout shake. What is the best source of carbs to take at that time: a supplement powder I could combine with my shake or a food source?

Post-workout, it doesn't matter, as long as they are fast-digesting or high-glycemic carbs. For supplements, nothing beats Vitargo in my opinion, a powdered complex carb supplement that actually digests about twice as fast as most sugars.

Another option is simply [dextrose powder](#). For foods, fat-free sugary candies are best. One company that stands out is Wonka. Many of their candies, such as Pixy Stix, Sweet Tarts and Bottle Caps are made with either dextrose or maltodextrin, which are both basically pure glucose and will spike insulin and drive [amino acids](#), [carbs](#) and [creatine](#) into your muscles, and turn on muscle protein synthesis to stimulate growth.

Slow-digesting carbs, such as most fruit, oatmeal, whole-wheat bread, etc., are not the best choice, as they keep insulin levels low and steady.

Q: Is it possible to stay ketogenic with a 50g glucose post-workout shake and just fibrous carbs the rest of the day? I would not want to compromise my muscle growth during this keto-cutting phase.

You really don't need to worry about staying ketogenic when you go low carb. That was one mistake of the old Atkins plan. Although being ketogenic does ensure that you're burning fat, that is more critical for those trying to lose bodyfat without exercise.

If you work out regularly, you don't need to be so restrictive with the carbs, as the workouts deplete your body's stored carbs (glycogen).

So, yes, I would recommend going with some fast carbs, like 30-40g of dextrose with your post-workout protein and sticking to fibrous carbs the rest of the day.

Q: Is it true that higher levels of testosterone weaken the immune system? If so, what do you recommend to help keep the immune system strong? I am very active and follow a healthy diet with supplements, but still get sick about three or four times per year.

Yes, there is some truth to that, since testosterone is involved in controlling the T-cells. But instead of dropping your testosterone on purpose, I suggest you keep your muscle and work to help support immune function with [vitamin C](#) (2-4g per day), [vitamin D](#) (2,000-4,000 international units per day) and [echinacea](#) (500-1,500mg per day).

Photo Shoot Location: Gold's Gym Hawthorne; Hawthorne, California

Interview by Sean Andros

Photography by [Pavel Ythjall](#)

ABOUT THE AUTHOR

Flex Magazine



Founded in 1983, Flex Magazine offers training and diet tips, pro athlete profiles, and contest coverage.

[View All Articles By This Author](#)



EXHIBIT E



THE ENCYCLOPEDIA OF SUPPLEMENTS: A-F

Get the REAL facts on all of your favorite supplements.

By **Jim Stoppani, Ph.D**

SHARE



ADVERTISING



ALL-NEW. ALL YOU. HIGHLANDER



VALLEY TOYOTA DEALERS



ALL-NEW. ALL YOU. HIGHLANDER.

Toyota - Sponsored

[See Current Offers >](#)

With all the supplements on the market today, it's hard to figure out what each one does, how much to take, when to take it, and so on. Which ones will pack on size? Which ones will help you get ripped the fastest? With so many questions, wouldn't it be great if you could go to one place that had all the answers to your supplement needs? Such a place doesn't exist, you say? It didn't—until now!

FLEX feels your pain and has put together a list of every worthwhile supplement you're likely to encounter on your next trip to the store. Each is rated for effectiveness and broken down into categories with listed benefits. Plus, we tell you just how much to take and the best times of day (or night) to take them so that all of your hard work in the gym doesn't go to waste. If you were confused about supplements before, you won't be after you read this. So here's Part 1 of the FLEX Supplement Encyclopedia: A to F.



ADENOSINE TRIPHOSPHATE (ATP)

RATING: ★★★

CATEGORIES:

MB, ST, FL

BENEFITS: Adenosine triphosphate is a nucleic acid and major energy source for every cell in the body. But taking the supplemental form does not increase the amount of ATP within cells. It boosts blood levels of ATP, which increases blood flow to exercising muscles. ATP also reduces fat storage and burns more already-stored fat. One study reported that subjects taking ATP for 14 days increased their one-rep max and the number of reps they could complete with a weight to failure.

DOSAGE: 125–250mg twice daily on an empty stomach

AGMATINE

RATING: ★★★

CATEGORIES: MB, ST, EP, HL

BENEFITS: This by-product of the breakdown of the amino acid arginine boosts nitric oxide (NO) levels and the release of insulin (an anabolic hormone that increases muscle growth and dilates blood vessels to further boost blood flow). Agmatine can increase training intensity and strength for stronger muscle contractions while blunting pain to help you do more reps. It can even help boost the anabolic hormones testosterone and growth hormone (GH) and provides an antioxidant benefit for recovery.

DOSAGE: 500–1,000mg 30–60 minutes before workouts

ALPHA-GLYCERYLPHOS-PHORYLCHOLINE (ALPHA-GPC)

RATING: ★★★

CATEGORIES: MB, MA, HL

BENEFITS: Derived from soy lecithin and a good source of choline, Alpha-GPC increases GH production by inhibiting a brain chemical that normally blocks it. One study reported that a single dose increased bench-press strength by 15%. It can enhance mental function by increasing acetylcholine production.

DOSAGE: 250–500mg one hour before workouts and before bed

ALPHA-LIPOIC ACID (ALA)

RATING: ★★★

CATEGORIES: FL, HL, MB

BENEFITS: A powerful antioxidant that also improves muscle glucose and creatine uptake when it's consumed with simple carbs like dextrose. ALA is included in some fat-loss products because it reduces the amount of insulin released when carbs are eaten, which increases fat burning and reduces hunger.

DOSAGE: For increased creatine uptake: 500–600mg with 2–5g of creatine; fat loss and antioxidant protection: 100–300mg two to three times per day

ARGININE

RATING: ★★★★★

CATEGORIES: MB, ST

BENEFITS: This amino acid enhances NO production, which improves blood flow to exercising muscles and delivers nutrients, hormones, and oxygen to aid in recovery. Arginine also boosts GH levels. Research shows significant strength improvements in men taking arginine products.

DOSAGE: 3–5g of arginine or NO products three times per day, with one dose 30–40 minutes before exercise

ASHWAGANDHA

RATING: ★★★

CATEGORIES: MB, HL

BENEFITS: This herb, known scientifically as *Withania somnifera*, is a powerful anti-oxidant that helps to suppress free-radical production. In some studies, it has increased testosterone levels by up to 40%.

DOSAGE: 1,500–2,000mg three times per day with food, with one dose 30–60 minutes before workouts

ASTAXANTHIN

RATING: ★★★

CATEGORIES: HL, EP, FL

BENEFITS: This carotenoid is a potent anti-oxidant that improves immune function, aids cardiovascular health, and protects the eyes from cataracts and macular degeneration. Research also shows that it can increase endurance by up to 150%, thanks to its fat burning abilities.

DOSAGE: 4–6mg with meals once or twice per day, with one dose taken with your pre-workout shake

AVENA SATIVA

RATING: ★★★

CATEGORY: MB

BENEFITS: *Avena sativa* (the scientific name for oats) contains the active ingredient avenocossides, which are a type of plant saponin similar to the furostanolic saponins in Tribulus. They increase the amount of luteinizing hormone (LH) released from the pituitary gland, which influences the testicles to produce more testosterone. Evidence suggests that the avenocossides free up testosterone from its carrier protein, sex-hormone-binding globulin (SHBG), making more of it available to enter muscle cells to stimulate growth and boost strength gains.

DOSAGE: 100–300mg of a 10:1 *Avena sativa* extract two or three times a day, with one dose 30–60 minutes before workouts

BANABA LEAF EXTRACT

RATING: ★★★

CATEGORIES: MB, HL

BENEFITS: Used as traditional medicine in the Philippines to treat diabetes and kidney diseases, the leaves appear to act in a similar manner to insulin by activating insulin receptors. One of the main ingredients responsible for this action is corosolic acid.

DOSAGE: 30–50mg banaba leaf extract standardized for corosolic acid with your post-workout shake

BETA-ALANINE

RATING: ★★★★★

CATEGORIES: ST, MB, EP

BENEFITS: In the body, beta-alanine combines with another amino acid, histidine, to form the dipeptide (two aminos bound together) known as carnosine, also a component of vitamin B3. Research shows that muscles with higher levels of carnosine can generate greater forceful contractions for a longer period, resulting in superior strength, endurance, and mass gains. In one study, subjects taking beta-alanine with creatine gained more muscle and lost more fat than subjects taking just creatine.

DOSAGE: 2–3g with your pre- and post- workout shakes

BETA-CAROTENE**RATING: ★★★★★****CATEGORY: HL**

BENEFITS: This phytonutrient—with antioxidant and provitamin A activity—provides a nontoxic source of vitamin A. It also works with other natural protectors to defend cells from free radicals, and it aids metabolic functions, such as recovery from exercise.

DOSAGE: 5,000–25,000 international units (IU) per day with fat-containing meals

BETA-ECDYSTERONE**RATING: ★★★****CATEGORIES: ST, MB**

BENEFITS: This phytochemical, found in plants such as spinach, stimulates protein synthesis and drives muscle growth with no impact on hormone levels.

DOSAGE: 100mg with meals, including before and after workouts, for a total of 400–500mg daily

BETAINE**RATING: ★★★★★****CATEGORY: HL**

BENEFITS: This unique amino acid (also called trimethylglycine) derived from beets aids joint and liver repair, joint building, and liver protection. Studies show that it boosts strength and power, increases growth hormone and insulin-like growth factor-1 (IGF-1) levels, and even acts like the body's own production of creatine. Research suggests that it may also support faster recovery from injury and inflammation.

DOSAGE: 1,500–3,000mg with pre- and post-workout meals

BETA-PHENYLETHYLAMINE**RATING: ★★★****CATEGORY: FL**

BENEFITS: Also called phenylethylamine (PEA), this naturally occurring metabolite of the amino acid phenylalanine is a stimulatory transmitter in the body that enhances neurotransmission. It promotes fat burning by increasing the release of norepinephrine, which raises dopamine and serotonin levels in the brain, thereby reducing the sensation of pain and boosting feelings of euphoria to help bodybuilders tolerate the rigors of contest dieting. It's also available as beta-

methoxyphenylethylamine, a form that significantly enhances its half-life in the body and allows a single dose to be more effective.

DOSAGE: 100–500mg one or two times daily

BIOPERINE (PIPERINE)

RATING: ★★★

CATEGORY: HL

BENEFITS: Piperine is an active extract derived from black or long pepper. Research suggests it enhances nutrient absorption, most likely by increasing blood flow to the digestive tract. In one study, taking vitamin B6 along with Bioperine-branded piperine more than doubled the amount of B6 found in the blood of healthy men two hours after ingestion.

DOSAGE: 5mg daily with food

BOVINE COLOSTRUM

RATING: ★★★

CATEGORY: MB

BENEFITS: Large doses of bovine colostrum— the first milk produced by cows during the initial days after giving birth—have been shown to improve immune function and increase levels of IGF-1. In addition, research indicates that it may aid muscular endurance. Gram per gram, the protein in colostrum is a bit more anabolic than that found in whey or other protein powders like casein or egg protein.

DOSAGE: Replace 5–10g of protein in your pre- and post-workout shakes with 5–10g of bovine colostrum.

BRANCHED-CHAIN AMINO ACIDS (BCAAs)

RATING: ★★★★★

CATEGORIES: MB, EP, FL

BENEFITS: BCAAs include the essential amino acids leucine, isoleucine, and valine, the most important aminos for the manufacture, maintenance, and repair of muscle tissue. Research shows that of the three, leucine can stimulate protein synthesis (the process of building muscle protein and, therefore, growth). Yet, the three work better together to provide a host of benefits and even boost energy during training. Studies show BCAAs can blunt the catabolic hormone cortisol and decrease delayed-onset muscle soreness.

DOSAGE: 5–10g with a whey shake in the morning, as well as with your pre- and post-workout shakes

CAFFEINE

RATING: ★★★★★

CATEGORIES: FL, EP, MA, ST, HL

BENEFITS: A stimulant and effective fat burner due to its ability to increase the release of fat from fat cells, caffeine has been shown to boost strength and power output when taken one hour before workouts. New studies show it may help prevent several neurodegenerative and cardiovascular diseases, too.

DOSAGE: For fat loss and weight management: 100-200mg between meals; mental acuity and focus: 50-200mg every couple of hours; strength and power: 200-400mg one hour before workouts

CALCIUM

RATING: ★★★★★

CATEGORIES: FL, EP, HL

BENEFITS: Essential for growth of the musculoskeletal system, calcium also regulates and is critical for the contraction and relaxation of muscle tissue. In addition, it can help burn body fat by promoting thermogenesis and reducing dietary fat absorption.

DOSAGE: 500-600mg two or three times per day

CAPSAICIN

RATING: ★★★★★

CATEGORIES: FL, HL

BENEFITS: The chemical in chili peppers that makes them spicy, capsaicin enhances fat loss by first raising levels of the neurohormone norepinephrine, which increases metabolic rate. It has been found to elevate fat burning when taken an hour before aerobic exercise and can also decrease hunger. Look for capsaicin supplements that list Scoville thermal units, or heat units, with a dosage that supplies 40,000-80,000 units. You can also take ¼ tsp of ground red pepper or cayenne pepper that lists the heat units.

DOSAGE: 40,000-80,000 units 30 minutes before meals and one hour before cardio

CARNITINE

RATING: ★★★★★

CATEGORIES: FL, MB

BENEFITS: Carnitine aids the transport of fats into the machinery of muscle cells (mitochondria), where it's burned for fuel. Research shows it improves fat loss during exercise and low-carb dieting. Carnitine also appears to enhance recovery following intense lifting and increases the number of testosterone receptors in muscle cells, thereby aiding growth. Further evidence points to carnitine as a potent NO booster, which means more blood flow and enhanced nutrient, oxygen, and anabolic hormone delivery to muscles.

DOSAGE: 1,000–3,000mg in the form of L-carnitine, acetyl-L-carnitine, L-carnitine- L-tartrate (see also glycine propionyl-L-carnitine); you can also take another dose with meals in the morning and with evening meals

CARNOSINE

RATING: ★★☆☆

CATEGORIES: ST, MB

BENEFITS: Carnosine is what beta-alanine forms in muscle cells when it combines with histidine. So why do most supplements use beta-alanine and not carnosine? Because when you consume carnosine, it gets broken down in the digestive tract to beta-alanine and histidine. However, some supplements do provide carnosine. Carnosine and beta-alanine, are both effective for boosting strength, power, and size.

DOSAGE: 2–3g with your pre- and post- workout shakes

CHITOSAN

RATING: ★★

CATEGORY: FL

BENEFITS: Chitosan is a charged protein derived from chitin that attracts, binds, and removes fat from the digestive system before it can be absorbed by the body. One study reported that those taking chitosan without dieting lost about three pounds more body fat than subjects taking a placebo.

DOSAGE: 2g before high-fat meals

CASEIN PROTEIN

RATING: ★★★★★

CATEGORY: MB

BENEFITS: A fraction of milk protein, casein provides a steady stream of amino acids over a longer period of time (during sleep, for example) in comparison to whey protein, the soluble protein fraction in milk. Research shows that those adding casein to a post-workout whey shake gained more muscle than those taking whey without casein.

DOSAGE: 20–40g between meals and/or before bedtime. Also consider replacing 10–20g of whey in your post-workout shake with casein.

CHLOROPHYLL

RATING: ★★

CATEGORIES: HL, EP

BENEFITS: Chlorophyll is a group of green pigments that absorbs light for photosynthesis, which sustains plant life through the conversion of sunlight into chemical energy. It provides numerous benefits to humans, too, mainly due to its antioxidant and anti-inflammatory effects. Research shows that daily use can decrease DNA damage by more than 50%, which also helps with muscle recovery. Chlorophyll may even help to boost endurance by aiding the oxygen delivery to muscles and may protect against certain cancers and even halitosis.

DOSAGE: 100mg two or three times per day

CHOCAMINE

RATING: ★★★

CATEGORIES: FL, EP, MA, HL

BENEFITS: An extract from cocoa that provides all the benefits of chocolate without the sugar or fat, chocamine contains a number of active ingredients that help suppress appetite and enhance metabolism, including caffeine, tyramine, theobromine, and phenylethylamine. These components also boost energy and improve mood, concentration, and alertness. **DOSAGE:** 1–2g up to three times per day

CHONDROITIN

RATING: ★★★★★

CATEGORY: HL

BENEFITS: Some manufacturers combine chondroitin with glucosamine or other ingredients that can have a synergistic effect on joint health. As with glucosamine, chondroitin can help ease arthritis symptoms and may also protect joints from destructive enzymes. It can take up to three months of continuous use before effects are noticeable.

DOSAGE: 800–1,500mg of chondroitin sulfate or chondroitin hydrochloride daily in two or three divided doses

CHROMIUM

RATING: ★★★

CATEGORIES: FL, MB

BENEFITS: Chromium is essential for helping the body maintain optimal insulin function, which is important for staying lean and building muscle. Research has also shown that it can significantly reduce carb cravings, enhance fat loss, and lower cortisol levels. Chromium is easily depleted in those individuals restricting calories and/or training intensely.

DOSAGE: 200–400 micrograms (mcg) of chromium picolinate or chromium nicotinate per day with meals

CHRYSIN

RATING: ★★★

CATEGORIES: MB, ST

BENEFITS: Chrysin (also known as 5, 7-dihydroxyflavone) is a flavonoid compound that inhibits the aromatase enzyme that converts testosterone into estrogen. More recent research from Texas Tech University, in Lubbock, finds that it can also directly increase testosterone production by enhancing the testis' ability to convert cholesterol into steroid hormones such as testosterone.

DOSAGE: 1g with breakfast, lunch, and the last meal of the day

CINNAMON EXTRACT

RATING: ★★★

CATEGORIES: HL, FL, MB

BENEFITS: Cinnamon contains the active component hydroxycinnaldehyde, which imitates the effects of insulin—a powerful anabolic hormone that drives carbohydrates and amino acids into muscle cells—and allows better binding to insulin receptors on muscle cells. With more of the carbs being pushed into the muscle fibers, it is less likely that those carbs will be stored as body fat. In addition, insulin acts like a key in muscle cells to directly turn on the process known as muscle protein synthesis, which boosts growth.

DOSAGE: 100–250mg with meals daily (such as the trademarked cinnamon extract Cinnulin PF)

CITRULLINE/CITRULLINE MALATE

RATING: ★★★★★

CATEGORIES: EP, MB

BENEFITS: This amino acid is closely related to arginine and is readily converted to arginine in the body. Research shows that taking citrulline increases arginine and NO levels in the blood better than taking arginine by itself. It also helps prevent muscle fatigue by aiding in the removal of ammonia from the body, reabsorbing lactate for increased ATP resynthesis during high-intensity workouts, and boosting muscle protein synthesis via direct anabolic signaling. Citrulline malate elevates muscle ATP by 35% during exercise and increases the rate of creatine phosphate resynthesis by 20%.

DOSAGE: 3–6g of L-citrulline or citrulline malate 30–60 minutes before workouts

COLLAGEN HYDROLYSATE/ GELATIN

RATING: ★★★★★

CATEGORY: HL

BENEFITS: Collagen hydrolysate is a protein that helps regenerate and synthesize cartilage. One study on osteoarthritis patients reported that those taking collagen had significant pain reduction and could reduce their use of nonsteroidal anti-inflammatory

drugs. Collagen hydrolysate also stimulates the synthesis of type II collagen in cartilage.

DOSAGE: 10g per day, taken for at least three months

CONJUGATED LINOLEIC ACID (CLA)

RATING: ★★★★★

CATEGORIES: FL, MB, HL

BENEFITS: This fatty acid found in meats and dairy products can help incinerate body fat while simultaneously increasing muscle mass and strength. CLA also assists in reducing the risk for certain cancers. You must supplement for at least 12 weeks for effects to be noticeable, and CLA appears to be most effective when consumed as part of a low-calorie or low-fat diet. Look for cis-9, tran-11 and/or tran-10, or cis-12 on the label.

DOSAGE: 1–3g with breakfast, lunch, and dinner

COENZYME Q10 (CoQ10)

RATING: ★★★★★

CATEGORIES: EP, HL

BENEFITS: CoQ10 is involved in all oxygen-utilizing (aerobic) metabolic reactions within the body and helps muscle cells convert energy. Research supports its use in controlling blood pressure and preventing heart disease by reducing LDL (bad) cholesterol. Training generates muscle-damaging free radicals, which CoQ10 helps neutralize; it's also used to turn carbs and fat into energy. One study found that supplementing with 300mg of CoQ10 daily for eight days reduced fatigue during exercise and sped up recovery between bouts of exercise. As an antioxidant, CoQ10 regenerates the antioxidant power of vitamins C and E.

DOSAGE: 300mg per day with meals

CREATINE

RATING: ★★★★★

CATEGORIES: MB, ST, EP, HL

BENEFITS: Made from the three aminos arginine, glycine, and methionine, creatine is technically an amino-acid supplement, not an individual amino. Creatine boosts lean muscle mass gains by about 10 pounds and strength by about 10% in just a few weeks, even in highly trained lifters. It also helps bolster levels of creatine phosphate, which in turn boosts ATP production, the ultimate energy source for muscles.

DOSAGE: Depending on the form of creatine you use, take about 2–5g with your pre- and post-workout protein shakes.

CURCUMIN

RATING: ★★★★★

CATEGORY: HL

BENEFITS: This active ingredient in the spice turmeric not only protects you from cancer and heart disease but has also been shown to relieve the pain and inflammation associated with healing from surgery and arthritis. Research has also shown that it can significantly reduce cartilage destruction by inhibiting chemicals that instigate inflammation in the body.

DOSAGE: 200–500mg of turmeric extract standardized for at least 85% curcumin, two or three times per day

D-ASPARTATE

RATING: ★★★★★

CATEGORIES: MB, ST

BENEFITS: This amino acid is produced in the pituitary gland, where it stimulates the release of LH. Then, LH travels via the bloodstream to the testicles where it causes a boost in testosterone production. D- aspartate is also produced inside the testicles and acts on Leydig cells (special cells in the testicles that produce testosterone) to increase T production as well as the production of sperm. One study reported that men taking D-aspartate for just 12 days increased their testosterone levels by more than 40%.

DOSAGE: 3g in the morning

DAMIANA

RATING: ★★★

CATEGORIES: MB, ST

BENEFITS: This shrub, also known as *Turnera diffusa*, has been used for centuries as a sex booster. However, it wasn't until recently that damiana leaf extract was shown to inhibit the aromatase enzyme, which converts testosterone into estrogen in the body. The active ingredients in damiana, called pinocembrin and acacetin, were mainly responsible for this effect. **DOSAGE:** 50–500mg of damiana extract three times per day in between meals

DEHYDROEPIANDROS- TERONE (DHEA)

RATING: ★★★

CATEGORIES: MB, ST, FL, HL

BENEFITS: Produced by the adrenal glands, the hormone DHEA supports insulin function, increases bone density, promotes mental health, and, of course, works as a precursor for testosterone. Research has found that it helps reduce body fat, particularly from the midsection; it also increases levels of IGF-1, an anabolic factor critical for muscle growth. DHEA levels can start to decline in the early 20s in males who train intensely.

DOSAGE: 25–100mg once or twice daily

DIGESTIVE ENZYMES**RATING: ★★★****CATEGORIES: HL, MB**

BENEFITS: Enzymes are proteins that act as catalysts, enabling metabolic processes to occur at lightning speed. They also break down the macronutrients—protein, carbs, and fat. Of major importance to the bodybuilder are the protease enzymes that break down protein. Research shows they can also help accelerate muscle recovery after workouts as well as reduce swelling and speed the healing of certain injuries. Choose an enzyme formula that contains some or all of the following: trypsin, chymotrypsin, pepsin, pancreatic enzymes, bromelain, and papain.

DOSAGE: 250–500mg 15 minutes before meals***DIINDOLE/DIINDOLYMETH- ANE (DIM)*****RATING: ★★★****CATEGORY: MB**

BENEFITS: Diindole can help neutralize the negative effects of high estrogen levels, helping to keep testosterone levels up without aromatization (the process in which testosterone is converted to estrogen, which leads to excess water and fat retention). Taking DIM with vitamin E can increase its absorption.

DOSAGE: 200–300mg in two or three divided doses***DIMETHYLAMINOETHANOL (DMAE)*****RATING: ★★★****CATEGORY: MA**

BENEFITS: DMAE was originally marketed in the 1960s as a prescription drug to enhance learning and memory in individuals with attention disorders. Research shows that it leads to higher choline levels in the brain than taking choline by itself. This effect seems to be due to the fact that DMAE inhibits the breakdown of choline, which should lead to higher acetylcholine levels and, thus, better mental function.

DOSAGE: 100–200mg once or twice a day***DIMETHYLAMYLAMINE*****RATING: ★★★★★****CATEGORIES: EP, FL**

BENEFITS: This stimulant, also known as methylhexanamine, is the active ingredient found in geranium oil. Anecdotal reports claim that 1-3, dimethylamylamine provides a euphoric effect that enhances workouts better than caffeine. In addition to

increasing alertness, it can enhance mood, decrease hunger, and aid fat burning.

DOSAGE: 25–50mg of dimethylamylamine or 150–500mg of geranium extract about 30 minutes before workouts

ECHINACEA

RATING: ★★★★★

CATEGORY: HL

BENEFITS: Well known for its immune-protective properties, this herb has been shown to offer some defense against colds and the flu and can be used to protect the immune system from the stress caused by heavy training. It may also boost the appetite, which can be critical in mass-gaining phases. Some research even suggests that echinacea increases production of oxygen-carrying red blood cells, which could enhance endurance. Look for products that contain *Echinacea purpurea* standardized to 4% ses-quiterpene esters, or *Echinacea angustifolia* standardized to 4% echinacosides.

DOSAGE: 200–400mg two to four times per day during flu season or at the onset of a cold. To stimulate appetite, take 400–500mg before meals. It is best to cycle this supplement in periods of three weeks on and one week off.

EGG PROTEIN

RATING: ★★★★★

CATEGORY: MB

BENEFITS: Also known as egg albumen, this is an effective source of protein that's well tolerated by many people, including those who are lactose-intolerant. With a high content of BCAAs, which can help drive muscle protein synthesis and hypertrophy, it stimulates protein synthesis similar to milk protein. It's also rich in the amino acid arginine, which triggers NO production. Egg white protein is a high- sulfur-containing protein, which is crucial to the body's hormone-producing pathways, meaning it can further enhance growth.

DOSAGE: 20–50g between meals or 10–20g added to your pre- and post-workout shakes

ELDERBERRY EXTRACT

RATING: ★★★★★

CATEGORY: HL

BENEFITS: Elderberry extract comes from the fruit of the *Sambucus* plant, a genus of up to 30 species of shrubs. One study reported that phytochemicals in elderberry directly bind to the H1N1 virus and block its ability to enter cells, which is critical for its infectious effects. And if you do contract the flu, research shows that taking elderberry extract can reduce the duration by half.

DOSAGE: 2–4g four times per day

EURYCOMA LONGIFOLIA JACK

RATING: ★★★

CATEGORIES: MB, ST, HL

BENEFITS: This rainforest plant, also known as Malaysian ginseng or *tongkat ali*, appears to directly enhance testosterone production by stimulating the Leydig cells—special cells that convert cholesterol into testosterone—in the testes. It may also free up testosterone in the blood. Testosterone normally circulates in the blood, bound to the carrier protein called SHBG. This protein extends the time testosterone stays in the blood but prevents it from entering muscle cells. *E. longifolia* Jack is believed to help release testosterone from SHBG so that more of it can enter muscle cells to induce growth. Look for products that provide a 20:1 extract of *E. longifolia* Jack.

DOSAGE: 200–300mg two or three times per day

EVODIAMINE

RATING: ★★★

CATEGORY: FL

BENEFITS: This extract from the *Evodia rutaecarpa* fruit burns fat by stimulating specific receptors in the central nervous system that boost metabolic rate. Evodiamine also reduces hunger and slows the digestion of food, which not only keeps you feeling fuller longer but also causes a slow and steady release of glucose into the bloodstream, helping prevent insulin spikes that could lead to greater fat storage.

DOSAGE: 30–50mg two or three times per day

FENUGREEK

RATING: ★★★

CATEGORIES: MB, ST, FL, HL

BENEFITS: This herb has myriad health benefits, the most notable being increased insulin release due to its high concentration of a BCAA isomer, 4-hydroxyisoleucine. Fenugreek can also elevate testosterone levels as a result of its high content of furostanolic saponins, which increase LH levels to stimulate testosterone production.

DOSAGE: 500–2,000mg per day of furostanolic saponins from fenugreek, or the equivalent of at least 1mg of 4-hydroxyisoleucine per pound of body weight with your post-workout shake to rapidly restore muscle glycogen

FIBER

RATING: ★★★

CATEGORIES: HL, FL

BENEFITS: Fiber is an indigestible complex carbohydrate. Consumption of soluble and insoluble fiber enhances the health of the digestive tract and improves the absorption and efficiency of bodybuilding diets. Fiber increases the bulk of food consumed,

helping to process it. You should consume about 10–15g of fiber for every 1,000 calories eaten from food or supplements.

DOSAGE: 3–5g of fiber from supplements before large meals to help slow digestion, up to three times per day

FISH OIL

RATING: ★★★★★

CATEGORIES: HL, FL, MB, ST

BENEFITS: Fish oil contains the essential omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). These fatty acids appear to reduce the risk of heart disease and stroke, as well as prevent muscle breakdown, enhance joint healing, improve brain function, and help achieve greater fat loss.

DOSAGE: 1–3g with meals two or three times per day

5-HYDROXYTRYPTOPHAN (5-HTP)

RATING: ★★★

CATEGORIES: FL, MA, HL

BENEFITS: This modified amino acid is what the essential amino tryptophan is converted to before it forms serotonin and melatonin in the body. In men, 5-HTP has been shown to increase LH and gonadotropin-releasing hormone to boost testosterone levels. Serotonin can help curb food cravings—especially for carbohydrates—and melatonin can help you relax before bed. All this makes 5-HTP great to take at night to promote adrenal recovery and ease food cravings when they seem to be strongest. In one study, subjects taking 5-HTP ate fewer calories per day and lost an average of 11 pounds in 12 weeks, while a placebo group had difficulty limiting caloric intake and lost only two pounds.

DOSAGE: 50–1,300mg 30–60 minutes before bed (those taking prescribed antidepressants should not use 5-HTP before discussing it with a physician)

FLAXSEED OIL

RATING: ★★★★★

CATEGORIES: FL, HL, MB

BENEFITS: Flaxseed oil is an excellent source of alpha-linolenic acid, which the body can convert to the omega-3 fatty acids EPA and

DHA (see “Fish Oil”), and it has potent anti-inflammatory properties. If on a low-fat diet, men should limit the amount of flaxseed oil consumed to 30g per day; when combined with a diet low in fat, it has been shown to reduce testosterone in men by 15% within 30 days.

DOSAGE: 1–2 tbsp per day with food

FOLIC ACID**RATING:** ★★★★★**CATEGORIES:** HL, MB

BENEFITS: Also known as folate, this B vitamin is critical for the production and maintenance of new cells (such as muscle cells); it's also needed to make DNA and RNA, the building blocks of all cells. Folate even plays a role in the conversion of arginine to NO. It also regulates the co-factors that directly influence the amount of arginine that can be converted to NO, resulting in greater NO production.

DOSAGE: 400–800mcg in the form of folic acid or L-methylfolate

FORSKOLIN**RATING:** ★★★★★**CATEGORIES:** FL, MB

BENEFITS: Forskolin is the active compound in the herb *Coleus forskohlii*, a member of the mint family. It enhances fat loss by activating the enzyme adenylate cyclase, which is also involved in testosterone production. This leads to activation of the hormone-sensitive lipoprotein lipase, which allows fat stored in fat cells to be broken down for use as fuel. Research found that overweight men who took forskolin for 12 weeks lost considerably more body fat and had higher levels of testosterone than a placebo group.

DOSAGE: Take a *Coleus forskohlii* supplement standardized for 20–50mg forskolin, two or three times daily before meals.

FUCOXANTHIN**RATING:** ★★★**CATEGORY:** FL

BENEFITS: This carotenoid increases the activity of uncoupling proteins in fat cells, which increases the activity of the metabolic machinery in cells and makes them burn more fuel to produce adequate energy. In other words, you burn more calories, such as fat, each day. Research shows that lab animals given fucoxanthin lost significantly more abdominal fat than animals receiving a placebo. Look for products that contain fucoxanthin extract like the trademarked form Xanthigen.

DOSAGE: 150–200mg two or three times per day before meals



WRITTEN BY
Jim Stoppani, Ph.D

RELATED ARTICLES



WHAT YOU TAKE AFTER YOUR WORKOUTS MATTERS

Enhance your recovery with these supplements.

By **Razvan Radu**

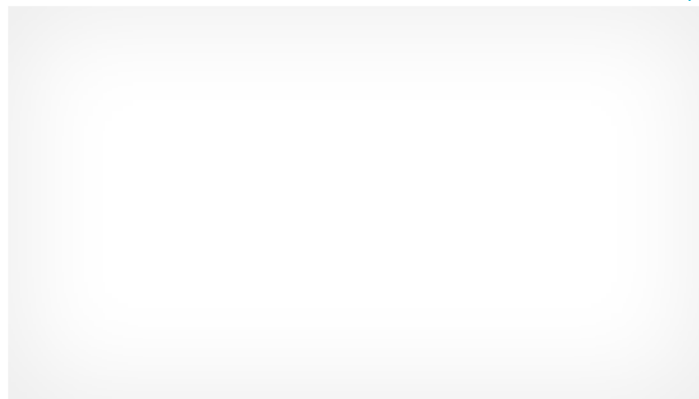
SHARE



You just finished an intense lifting session. What's next? At this point, you have your macronutrients covered in your post-workout meal. Proteins, carbohydrates, fats are all in check. But what should you take in between your workout and your meal? With your muscles becoming insulin sensitive—and depleted of nutrients—a post-workout supplement can be crucial for full recovery.

One important nutrient in need of replenishing is **creatine**. During a weightlifting session, your body processes all of its creatine stores in order to generate strength. After finishing up the session, your muscle activity is significantly increased, making it the optimal time for you to replenish the stores to ensure recovery. Ensuring that creatine enters the bloodstream and that the muscles maximally absorb it are both crucial for recovery.

ADVERTISING



There are several other key supps available that quicken recovery time, including:

TAURINE

This amino acid is best known for its ability to draw water into the muscles, similar to creatine. Taurine has also been proven to prevent muscle cramping through electrolyte regulation, increase force output, and dilate blood vessels.

BETA-ALANINE

Beta-alanine increases the levels of carnosine. Carnosine allows for a speedy muscle recovery, an increase in endurance, and strength elevation. Betaalanine works best when taken in smaller doses (~800mg) 3-4 times a day.

L-CARNITINE

Recent studies show that muscle tissue damage is reduced by 40% when supplementing with L-carnitine. The amino acid also acts as a fat burner, increasing the body’s capabilities to convert stored fat directly into energy.



WRITTEN BY
Razvan Radu

RELATED ARTICLES



NEWS
Pro Skater Neen Williams Got Sober and Then Got Shredded



NEWS
“The Blade” talks 2020 Olympia, Recovery from COVID, and his future....

STAY UP TO DATE

Sign up below to receive our newest workout routines, recipes, news stories, and offers from our partners

Enter Your Email Address

I want content for... Both Men Women

Muscle and Fitness Promotions

Muscle and Fitness Hers Promotions

SUBSCRIBE

FOLLOW US





THE ULTIMATE SUPP STACK FOR PACKING ON MUSCLE

The most important thing you can do is fuel your body for your workout. Here's how to do it right.

By **David Sandler**

SHARE



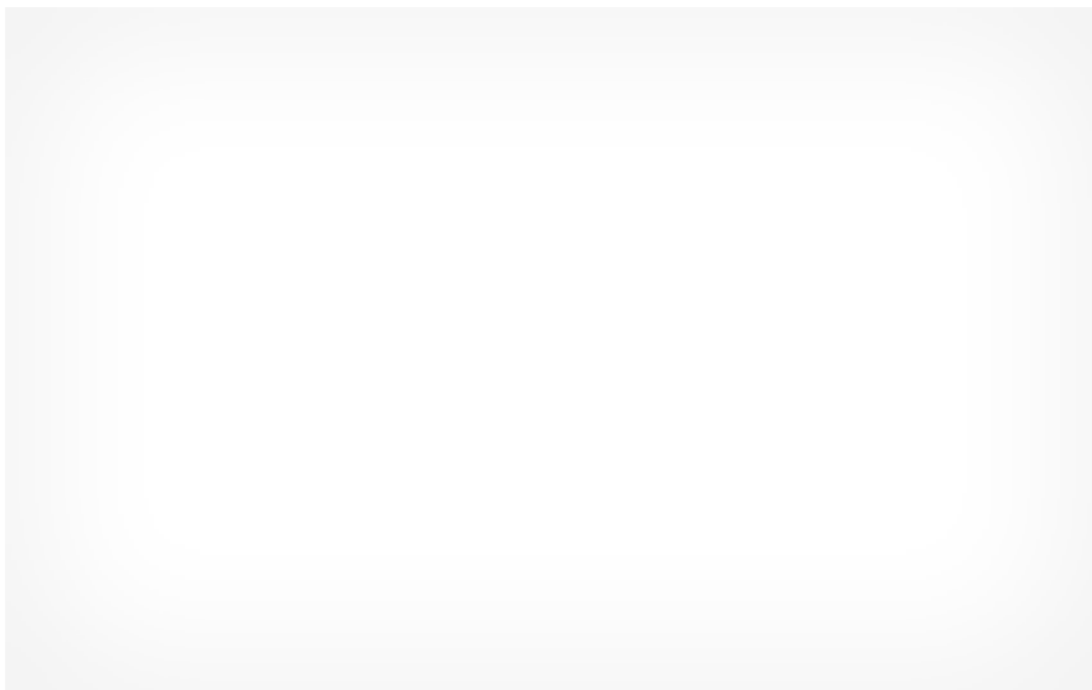
You can pile your supplements high and suck back everything and likely see some good results. In most cases, more is better, especially with protein, amino acids, creatine, and a few other choice ingredients. The ingredients selected here are chosen because of their ability to help fuel muscle growth, prevent too much muscle damage, and improve your rate of recovery. While stimulants play a big role for many lifters, the truth is that they do little to improve overall muscle quality, hence you will notice that I am not advocating stimulants in

your pre-workout matrix. Certainly each of you may have your fix, your vice, or an ingredient you cannot live without, and I am all for that. Placebo or not—and

I am not suggesting ingredients that don't appear here only provide a placebo effect—if you like it, take it, and don't let anyone tell you otherwise. While I have read the research and understand the physiological interactions, I, too, like some ingredients that have not seen the acclaimed fame of others through research.

Remember, about 30% of people are what we scientists call non-responders to ingredients that have been proven effective. Why isn't the opposite true? It is—scientists are just afraid to take the leap of faith. That is where I differ: Leap, jump, fly—don't leave anything on the table if it has a chance to help you reach new heights.

ADVERTISING





Pre-Workout

Possibly the most important thing you can do is properly fuel your body for your workout to give it what it needs to grow. Most people miss this step in light of trying to get wired up for their workouts. And while, for some, a jacked-up pre-workout may give an added kick, rarely do any give you what you really need. Stimulants do not help muscles grow. For that reason, I suggest taking a few specific ingredients to fuel muscle-building. If you feel you still need a jolt, then go ahead and get your crack fix!

Take: Creatine (up to 5g), BCAAs (at least 5g with 3g leucine), Nitrosigine (1g), citrulline malate or L-citrulline (at least 3g).



Post-Workout

The window of growth is at its max during and immediately following your workout, and since protein breakdown is in overdrive, your protein repletion should be right there with it. Additionally, since your muscles have lost some water and other vital nutrients during their hardworking session, they need some help getting back to “normal.” It is for these reasons that I suggest the following ingredients for a solid post-workout push.

Take: Creatine (up to 5g), BCAAs (at least 5g with 3g leucine), glutamine-alanine combo (5g), protein (20–30g).



Morning Stack

You've just come off a huge fast, and your body is starving for some good nutrients. Likely your muscles are looking for some loving as well. To get things rolling, you need to grab a good breakfast, one that is high in protein but also has some fat and carbs to round out the meal. With some extra help from a good supplement stack, you can keep your muscles growing by giving your body that push it needs.

Take: Multivitamin, fish oil, joint formula, protein (20–30g).



Cardio Cocktail

Most people like to use cardio to burn fat and calories and are often afraid to fuel up right before it. This is a mistake. While cardio has an instant calorie requirement, it also has benefits long after the session is complete. Overall, if you hit a good, fast-paced session, you will improve your metabolic rate on a daily basis that, over time, will help regulate your body's energy and fat-burning processes. Thus, this stack is created for those who are very serious about getting more out of their cardio routines.

Take: Caffeine (up to 200mg), Peak ATP (400mg) or ElevATP (150mg), beta-alanine (1.6–2g).



Evening Stack

Before you go to bed and shut down for the day, you need to make sure your muscles have an edge when they hit that nutrient- deprived fast known as sleep. Part of sleeping is to allow your body to work on the finer details, some of the more internal processes, rather than just focusing on building muscle, so to that end, this stack has a little of both.

Take: Fish oil, Focus/Sleep blend, protein blend (includes casein and/ or plant proteins, 20–30g).



WRITTEN BY
David Sandler

ALSO BY DAVID SANDLER

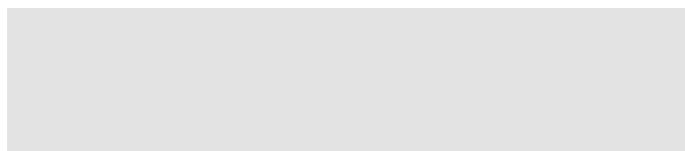
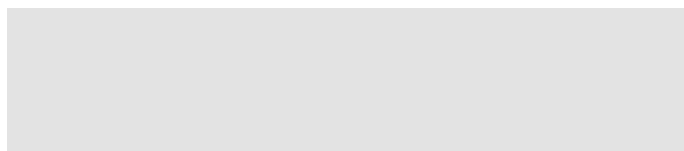


EXHIBIT F



Search results for "supplements"

Start typing to search...



Found 1649 result(s)



BUILD MUSCLE

BEST SUPPLEMENTS FOR BEGINNERS

Here are seven must-have items to build serious muscle.

[READ ARTICLE](#)



BUILD MUSCLE

THE ULTIMATE STARTER'S GUIDE: SUPPLEMENTS

Here's how to put your physique over the top.

[READ ARTICLE](#)



BUILD MUSCLE

THE 5 BEST NIGHTTIME SUPPLEMENTS

Are you taking the recommended supplements before you sleep?

[READ ARTICLE](#)



SUPPLEMENTS

SUPPLEMENT OF THE WEEK: ULTRISINE HARDCORE™

This fat burner boosts metabolism in a single dose. [sponsored]

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENTS FOR SKEPTICS

Convinced that supplements don't work for you? Check out this guide on how and when to take 3 top supplements. We think...

[READ ARTICLE](#)



[READ ARTICLE](#)



SUPPLEMENTS

POWER UP WITH GRAPES

Grape extract has long been touted as having beneficial health effects. Now the science is starting to catch up.

[READ ARTICLE](#)



SUPPLEMENTS

MIRACLE SUPPLEMENT

Creatine is known for increasing muscle growth, strength and endurance. Now research is showing that creatine has many ...

[READ ARTICLE](#)



LOSE FAT

SUPPLEMENTS ON A BUDGET

What is a good supplement stack for someone on a budget?

[READ ARTICLE](#)



SUPPLEMENTS

THE LIMIT TO SUPPLEMENTS

Learn the latest research on the limitation of supplements.

[READ ARTICLE](#)



LOSE FAT

SUPPLEMENT OF THE WEEK: ULTRISINE HARDCORE™

This fat burner boosts metabolism in a single dose.

[READ ARTICLE](#)



HERS SUPPLEMENTS

THE BEGINNER'S ESSENTIAL SUPPLEMENTS GUIDE

Confused about which supplements can help you shed fat?



SUPPLEMENTS

SUPPLEMENT STACKING 102

Ready to take your supps to the next level? Class is back in session.

[READ ARTICLE](#)



NUTRITION

SUPPLEMENT STACKING 101

Get ready for mass & strength gains, test boosting and fat loss.

[READ ARTICLE](#)



NUTRITION

FAST BLAST SUPPLEMENTS

Post-workout combinations to speed muscle growth.

[READ ARTICLE](#)



BUILD MUSCLE

11 BEST SUPPLEMENTS FOR MASS

Can't afford all the bulk-building supplements you'd like? This list of top bodybuilding ingredients will help you choos...

[READ ARTICLE](#)



HERS SUPPLEMENTS

THE BEGINNER'S GUIDE TO WOMEN'S SUPPLEMENTS

Add these 14 ingredients to your daily regimen to feel healthier, have more energy for the gym, and finally get the resu...

[READ ARTICLE](#)



HERS SUPPLEMENTS

THE FIT WOMAN'S GUIDE TO SUPPLEMENTS

Turn your hard work into results with the right supplements.

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENT OF THE MONTH: PREMIUM PROTEIN

IsoFlex's revolutionary whey protein isolate absorbs quickly to produce results you never thought possible.

[READ ARTICLE](#)



HERS SUPPLEMENTS

THE FOUR BEST SUPPLEMENTS FOR WOMEN

From boosting cardio performance and accelerating strength to recharging energy, these ingredients—and the supplements y...

[READ ARTICLE](#)



NUTRITION

7 SUPPLEMENTS FOR INTENSE ENERGY

Get the most out of your workouts with these energy-boosting supplements.

[READ ARTICLE](#)



RECOVER

FALL SUPPLEMENT GUIDE: MULTIVITAMINS

Figure out which multivitamin is right for you with our detailed guide.

[READ ARTICLE](#)



BUILD MUSCLE

FALL SUPPLEMENT GUIDE: BCAAS

Figure out which amino supplement is right for you with our detailed guide.

[READ ARTICLE](#)



BUILD MUSCLE

FALL SUPPLEMENT GUIDE: PROTEINS

Figure out which protein supplement is right for you with our detailed guide.

[READ ARTICLE](#)



TITLE.

[READ ARTICLE](#)



NEWS

SAVE OUR SUPPLEMENTS!

The supplement industry is under attack.

[READ ARTICLE](#)



SUPPLEMENTS

SAVE OUR SUPPLEMENTS!

Once again, the supplement industry is under attack, and if it seems like we've done this dance before, it's because we ...

[READ ARTICLE](#)



HERS SUPPLEMENTS

THE BEST SUPPLEMENTS FOR FITNESS COMPETITORS

Fitness expert Shannon Dey shares which supplements are best to help you reach your competitive goals

[READ ARTICLE](#)



THE BEST BEAUTY SUPPLEMENTS

For healthier hair, skin, and nails, these 10 supplements are key

[READ ARTICLE](#)



HERS SUPPLEMENTS

EQUAL OPPORTUNITY SUPPLEMENT

One of the most popular and effective sports supplements in the world works just as well for women as it does for men. H...

[READ ARTICLE](#)



HERS SUPPLEMENTS

STEAL HIS SUPPLEMENTS

Here are the must-have supplements you should loot from his stash.



HERS SUPPLEMENTS

THE BEST SUPPLEMENTS FOR YOUR GOALS

From boosting cardio performance and accelerating strength to recharging energy, these ingredients—and the supplements y...

[READ ARTICLE](#)



SUPPLEMENTS

FOUR SUPPLEMENTS TO ENHANCE GROWTH

Try these supplements that support greater blood flow, full muscle fibers, and enhanced growth

[READ ARTICLE](#)



SUPPLEMENTS

WHICH SUPPLEMENTS ARE TRULY SAFE?

This interview with Examine.com's director sheds light on the real science behind supps.

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENTS FOR SKEPTICS, PART 2

We choose three popular supplements and let you know exactly how and when to take them for optimal gains.

[READ ARTICLE](#)



BUILD MUSCLE

MAX MUSCLE SUPPLEMENT STACK

Preparation and recovery are just as important as your training sessions. Do both the right way with this supp stack.

[READ ARTICLE](#)



BUILD MUSCLE

CLEAR RESULTS PROGRAM: THE SUPPLEMENTS

Prepare for the Clear Results 12-week challenge with these powerful supplements.

[READ ARTICLE](#)



NEWS

ENCYCLOPEDIA OF SPORTS SUPPLEMENTS

ProSource.net offers the most informative publication on sports supplements available today.

[READ ARTICLE](#)



SUPPLEMENTS

DOUBLE-DUTY SUPPLEMENT

Is the wonder sleep aid melatonin also a pre-workout sensation?

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENT OF THE MONTH: WHEY-HD

Get a whey better whey protein with this M&F staff pick.

[READ ARTICLE](#)



BUILD MUSCLE

ULTIMATE STARTER'S GUIDE: THE SUPPLEMENTS

Pair these protein products from Optimum Nutrition for serious results—no matter your fitness level.

[READ ARTICLE](#)



SUPPLEMENTS

SUPPLEMENT YOUR MASS

The complete supplement program for adding major muscle

[READ ARTICLE](#)



NUTRITION

MUSCLE-DRIVING SUPPLEMENTS

Taken together, these supps will accelerate muscle growth

[READ ARTICLE](#)



[READ ARTICLE](#)



NUTRITION

FAT BURNING SUPPLEMENTS

These supplements will give you the edge you need to torch fat and look your best

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENT SPOTLIGHT: TESTOSTERONE BOOSTERS

Take your muscle-building potential to the next level with these powerful M&F-approved testosterone boosters.

[READ ARTICLE](#)



LOSE FAT

EMERGENCY SHRED: STACKED TO LOSE

Use these supps to fuel the workouts in the Emergency Shred program.

[READ ARTICLE](#)



BOOST WORKOUT

SUPPLEMENT OF THE MONTH: AMINOX

Taken together, these supps will accelerate muscle growth.

[READ ARTICLE](#)



BUILD MUSCLE

RISE ABOVE SUPPLEMENT STACK

What fuels Tyler McPeak's intense workouts? Get his Champion supplement stack.

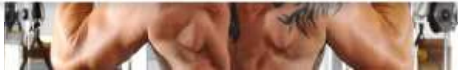
[READ ARTICLE](#)



BUILD MUSCLE

BRIAN STANN'S SUPPLEMENT STACK

Our June shipment included a full range of award-winning protein and workout supplements from Optimum Nutrition.



LOSE FAT

SUPPLEMENT OF THE MONTH: ANABOLIC HALO

Strike the right supplement balance when you want to fry body fat.

[READ ARTICLE](#)



BUILD MUSCLE

MAN OF STEEL SUPPLEMENT STACK

Pair NITRAFLEX and ADENOFLEX for amazing results before and after your workouts.

[READ ARTICLE](#)



BUILD MUSCLE

THE REVIEWS ON ROCK HARD SUPPLEMENTS ARE IN!

Augment your training and nutrition regimen with an ideal blend of high-performance muscle boosters and fat fighters

[READ ARTICLE](#)



ROCK HARD CHALLENGE SUPPLEMENTS

[READ ARTICLE](#)



BUILD MUSCLE

2013 SUPPLEMENT GUIDE: PROTEIN

Answer these questions to find out what kind of protein supplement is right for you.

[READ ARTICLE](#)



SUPPLEMENTS

BEHIND THE SUPPLEMENTS: ALLMAX NUTRITION

Full label disclosure, research backed ingredients and effective ingredient dosages are why pros use ALLMAX.

[READ ARTICLE](#)



SUPPLEMENTS

BEHIND THE SUPPLEMENTS: ANIMAL

Animal addresses needs of the most demanding, hard-training bodybuilders and strength athletes in the world.

[READ ARTICLE](#)



SUPPLEMENTS

BEHIND THE SUPPLEMENTS: OPTIMUM NUTRITION

The world leader in sports nutrition quality and innovation gives us an inside look into their bestselling supplements.

[READ ARTICLE](#)



SUPPLEMENTS

BEHIND THE SUPPLEMENT: RIVALUS

RIVALUS aims to make the most powerful and effective supplements that are free of hazardous substances and unwanted fill..

[READ ARTICLE](#)



SUPPLEMENTS

BEHIND THE SUPPLEMENT: CYTOSPORT

CytoSport is committed to building athletes from the inside out.

[READ ARTICLE](#)



BUILD MUSCLE

MAXIMIZE PERFORMANCE WITH THESE SUPPLEMENTS

Everyone needs a little support. These supplements will help you stretch your gains, recover faster and get a better wor...

[READ ARTICLE](#)



SUPPLEMENTS

THE ULTIMATE PRE-WORKOUT SUPPLEMENT STACK FOR ENHANCED MUSCLE PERFORMANCE

Improve muscle performance with this effective pre-workout stack

[READ ARTICLE](#)



WORKOUTS

NUTRITION

ATHLETES & CELEBRITIES

FEATURES

FLEX

M&Fers

OLYMPIA



[READ ARTICLE](#)



BUILD MUSCLE

THE SUPERMAN PROGRAM: SUPPLEMENTS

We keep you in the know about what supps you need to get a super body.

[READ ARTICLE](#)



BOOST WORKOUT

FEATURED SUPPLEMENT: MUSCLETECH HYDROXYSTIM

An up-close look at the active ingredients in MuscleTech's Hydroxystim.

[READ ARTICLE](#)



BOOST WORKOUT

5 SUPPS FOR OPTIMUM HEALTH

Add these five supplements to your repertoire to achieve all-around health and virility.

[READ ARTICLE](#)



BUILD MUSCLE

THE ULTIMATE STARTER'S GUIDE: SUPPLEMENTS

Take these five tried-and-true supplements to put your physique over the top.

[READ ARTICLE](#)



SUPPLEMENTS

THE ENCYCLOPEDIA OF SUPPLEMENTS: A-F

Get the REAL facts on all of your favorite supplements.

[READ ARTICLE](#)



RECOVER

SUPPLEMENT OF THE WEEK: ANIMAL FLEX

An up-close look at Animal's joint recovery product, designed specifically for serious weight lifters.



BUILD MUSCLE

SUPPLEMENT OF THE WEEK: BPI SOLID

We break down the active ingredients found in BPI's powerful anabolic hardening agent.

[READ ARTICLE](#)



2012 SUPPLEMENT BUYER'S GUIDE

[READ ARTICLE](#)



BOOST WORKOUT

SPECIALTY SUPPLEMENT GUIDE

The rest of the best supplements.

[READ ARTICLE](#)



RECOVER

RECOVERY SUPPLEMENT GUIDE

Get more intense workouts with these ingredients.

[READ ARTICLE](#)



BOOST WORKOUT

PRE-WORKOUT SUPPLEMENT GUIDE

Get more intense workouts with these ingredients.

[READ ARTICLE](#)



SUPPLEMENTS

ADVANCED SUPPLEMENTS: SUMMER MUSCLES

Get ripped just in time to show it off.

[READ ARTICLE](#)



SUPPLEMENTS

ADVANCED SUPPLEMENTS: BPI BLOX

An up-close look at BPI's new Silk Amino Acid.

[READ ARTICLE](#)



NUTRITION

THE ENCYCLOPEDIA OF SUPPLEMENTS: N-Z

The biggest supplement guide you're likely to see in any magazine is now complete.

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENTS FOR LEAN MUSCLE ENERGY

Stack these Muscletech supplements to get big and burn fat.

[READ ARTICLE](#)



EXCLUSIVE DEALS ON TOP SUPPLEMENTS!

Check out our Pre-Workout specials this month!

[READ ARTICLE](#)



BUILD MUSCLE

GH SUPPLEMENT STACK

Boost your GH levels with these essential supplements

[READ ARTICLE](#)



BOOST WORKOUT

THE WARRIOR FIT WORKOUT: SUPPLEMENTS

[READ ARTICLE](#)



[READ ARTICLE](#)



Rock-Hard Supplements

BUILD MUSCLE
ROCK-HARD SUPPLEMENTS

While the RHC diet and training program are sure to get you leaner with larger muscles, smart supplementation will enhan...

[READ ARTICLE](#)



BOOST WORKOUT
SUMMER SHRED: SUPPLEMENTS

[READ ARTICLE](#)



NEWS
VOTE FOR THE BODYBUILDING.COM SUPPLEMENT OF THE YEAR

The 2009 BodyBuilding.com Supplement awards are underway.

[READ ARTICLE](#)



FEATURES
SAVE OUR SUPPLEMENTS

Special report from the nutrition and dietary supplement industry's most exclusive conference

[READ ARTICLE](#)



ACTIVE LIFESTYLE
SAVE OUR SUPPLEMENTS

Special report from the nutrition and dietary supplement industry's most exclusive conference

[READ ARTICLE](#)



FEATURES
SAVE OUR SUPPLEMENTS

Special report from the nutrition and dietary supplement industry's most exclusive conference



FEATURES

SAVE OUR SUPPLEMENTS

Special report from the nutrition and dietary supplement industry's most exclusive conference

[READ ARTICLE](#)



SUPPLEMENTS

"ADD AN INCH" SUPPLEMENTS

Combine these supps with our gym-tested routine and watch your arms grow by an inch - literally - in just a few hours

[READ ARTICLE](#)



SUPPLEMENTS

SUPPLEMENTS: 6 UNUSUAL SUSPECTS

Getting to the next step may involve going back to basics with your supps

[READ ARTICLE](#)



GEAR

THE ULTIMATE SUPPLEMENT HANDBOOK

The only reference guide you'll ever need for supplement ingredients, pricing, dosage and timing.

[READ ARTICLE](#)



NUTRITION

SUMMER SHRED SUPPLEMENT STACK

Accelerate your fat loss and lean muscle gains with these potent supplements.

[READ ARTICLE](#)



NUTRITION

NEXT LEVEL: SUPPLEMENTS

Supplements to set you on the best path towards achieving your muscle-building goals.

[READ ARTICLE](#)



BUILD MUSCLE

A GUIDE TO SUPPLEMENTS FOR EVERY BUDGET

Want to get big? We have the right stuff for you no matter what how much you're able to spend.

[READ ARTICLE](#)



NUTRITION

THE 2016 STARTER'S GUIDE SUPPLEMENTS

[READ ARTICLE](#)



BOOST WORKOUT

LARRY WHEELS'S SUPPLEMENT STACK

The supplements that keep powerlifting phenomenon Larry "Wheels" Williams's wheels in motion.

[READ ARTICLE](#)



BUILD MUSCLE

OPERATION 16 SUPPLEMENTS

[READ ARTICLE](#)



BUILD MUSCLE

MASS GAINS SUPPLEMENT STACK

[READ ARTICLE](#)



BUILD MUSCLE

AESTHETIC TRAINING: SUPPLEMENT SPOTLIGHT

Abel Albonetti shares his top supps for maximizing aesthetic training results.

[READ ARTICLE](#)



[READ ARTICLE](#)



SUPPLEMENTS

THE BEST POST-WORKOUT SUPPLEMENTS

Restore your body with these essential muscle-building ingredients.

[READ ARTICLE](#)



LOSE FAT

TOP 10 2020 CUTTING SUPPLEMENTS

Gain muscle and lose fat for 2020 with these top supplements.

[READ ARTICLE](#)



BUILD MUSCLE

THE BEST OF THE BEST

The stack that helps John Cena hit his workouts stronger and harder.

[READ ARTICLE](#)



BUILD MUSCLE

THE BEST SUPPLEMENT STACKS FOR EVERY GOAL

Your ideal symphony of supplements.

[READ ARTICLE](#)



BUILD MUSCLE

SUMMER SHRED SUPP STACK

Accelerate your fat loss and muscle-building gains.

[READ ARTICLE](#)



NUTRITION

FIT IN 28: SUPPLEMENTS

[READ ARTICLE](#)



NUTRITION

RIPPED IN 28 DAYS: SUPPLEMENTS

[READ ARTICLE](#)



BUILD MUSCLE

BEYOND RAW SUPPLEMENTS

Experience the ultimate supp stack to take maximize your 'Level Up' results.

[READ ARTICLE](#)



BOOST WORKOUT

NEXT LEVEL: SUPPLEMENTS

Take your training to the Next Level with GAT's superior line of supplements.

[READ ARTICLE](#)



BUILD MUSCLE

TOP 10 BULKING SUPPLEMENTS FOR 2020

The top supplements to get you huge in 2020. [sponsored]

[READ ARTICLE](#)



LOSE FAT

THE 2019 SUMMER SHRED STACK

Power your summer shred with these supplements from MusclePharm.

[READ ARTICLE](#)



SUPPLEMENTS

THE 5 BEST SUPPS FOR FAT LOSS

Speed up fat loss with the right supps for your body.

[READ ARTICLE](#)





NEWS

FDA TO STRENGTHEN REGULATIONS OF DIETARY SUPPLEMENTS

The agency wants to protect Americans from potential dangers.

[READ ARTICLE](#)



SUPPLEMENTS

TOP 10 CUTTING SUPPLEMENTS FOR 2019

Check out the list based Strong Supplement's customer metrics. [sponsored]

[READ ARTICLE](#)



BOOST WORKOUT

NEW YEAR EMERGENCY SHRED SUPPLEMENTS

Need a boost? Try this supplement stack for better, faster results with your shred.

[READ ARTICLE](#)



BUILD MUSCLE

TOP 10 BULKING SUPPLEMENTS FOR 2019

Check out the list based Strong Supplement's customer metrics. [sponsored]

[READ ARTICLE](#)



SUPPLEMENTS

7 SUPPLEMENTS AND SNACKS FOR ENERGY

Get the most out of your workouts with these energy-boosting supplements.

[READ ARTICLE](#)



LOSE FAT

TOP 10 CUTTING SUPPLEMENTS FOR 2018

The year of shred. [SPONSORED]

[READ ARTICLE](#)



[READ ARTICLE](#)



BOOST WORKOUT

TOP 3 SUPPLEMENTS FOR GUYS ON A BUDGET

We ask Arnold Classic winner Ryan Terry for his go-to supps.

[READ ARTICLE](#)



HERS SUPPLEMENTS

4 SUPPLEMENTS TO PREVENT MUSCLE CRAMPS

These four supps will help you avoid cramps and get the most out of your workouts.

[READ ARTICLE](#)



BUILD MUSCLE

SUPP OF THE MONTH: NITRO-TECH CRUNCH

A delicious protein bar that packs a nutritious punch really does exist.

[READ ARTICLE](#)



BUILD MUSCLE

TOP 10 BULKING SUPPLEMENTS FOR 2017 [SPONSORED]

Once again, Strong Supplement customers have spoken as votes and reviews have been tallied, here are the top 10 bulking ...

[READ ARTICLE](#)



HERS FEATURES

SUPPLEMENTS FOR HEALTHY HAIR, SKIN AND NAILS

These 9 supplements will keep your hair, skin and nails naturally gorgeous.

[READ ARTICLE](#)



NUTRITION

TOP 10 CUTTING SUPPLEMENTS FOR 2017 [SPONSORED]

Strong Supplement customers have spoken. Here are the top cutting supps for the 2017 season.



LOSE FAT

TOP 10 CUTTING SUPPLEMENTS FOR 2017 [SPONSORED]

Strong Supplement customers have spoken. Here are the top cutting supps for the 2017 season.

[READ ARTICLE](#)



HERS SUPPLEMENTS

4 TOP STRENGTH-BOOSTING SUPPLEMENTS

Take your workout to the next level by adding the right strength supplements to your regimen.

[READ ARTICLE](#)



HERS SUPPLEMENTS

HOW TO FIND THE RIGHT SUPPLEMENT STACK

Taking several types of supplements simultaneously can amplify your results. Here's how to find the right mix.

[READ ARTICLE](#)



LOSE FAT

FALL SUPPLEMENT GUIDE: FAT BURNERS

Figure out which fat-burning supplement is right for you with our detailed guide.

[READ ARTICLE](#)



BOOST WORKOUT

FALL SUPPLEMENT GUIDE: SPECIALTY SUPPS

Figure out which specialty supplement is right for you with our detailed guide.

[READ ARTICLE](#)



BOOST WORKOUT

FALL SUPPLEMENT GUIDE: TESTOSTERONE BOOSTERS

Figure out which testosterone supplement is right for you with our detailed guide.

[READ ARTICLE](#)



SUPPLEMENTS

SUPPLEMENT OF THE MONTH: MISSION1 PROTEIN BARS

At long last, a protein bar without the junk.

[READ ARTICLE](#)



LOSE FAT

THE COMPLETE GUIDE TO FAT-LOSS SUPPLEMENTS

These nine fat burners will take you from "pretty ripped" to "downright shredded."

[READ ARTICLE](#)



BUILD MUSCLE

THE BARE-BONES BEGINNER STACK

Try this basic stack to get your bodybuilding efforts off the ground.

[READ ARTICLE](#)



HERS SUPPLEMENTS

7 TOP FAT-FIGHTING SUPPLEMENTS

Give your training and dieting efforts a boost with these seven fat-fighting supplements.

[READ ARTICLE](#)



NUTRITION

FLEX LEWIS' NUTRITION & SUPPLEMENT PLAN

Eat like the Olympia 212 Showdown Champ

[READ ARTICLE](#)



BUILD MUSCLE

WHAT SUPPLEMENTS SHOULD I TAKE?

Don't buy another supplement until you read this.

[READ ARTICLE](#)



Recommendations from GIVE.

[READ ARTICLE](#)



BOOST WORKOUT

4 SUPER SUPPLEMENTS FOR SUPER RESULTS

Get the 411 on how to get the most out of these four commonly used supplements.

[READ ARTICLE](#)



BOOST WORKOUT

3 MUST-HAVE POWERLIFTING SUPPLEMENTS

Maximize your powerlifting efforts with this effective supplement trio.

[READ ARTICLE](#)



WORKOUT TIPS

OLYMPIA WEEK SEMINAR: NUTRITION AND SUPPLEMENTS

In the first of three pre-Olympia online seminars, our expert addresses your questions on meal timing, protein types and...

[READ ARTICLE](#)



LOSE FAT

SUPPLEMENT OF THE MONTH: B4 FAT BURNER

Try these cutting-edge stimulants for better workouts and more effective fat loss.

[READ ARTICLE](#)



NUTRITION

THE MUSCLETECH CLEAR RESULTS CHALLENGE: THE SUPPLEMENTS

Build groundbreaking strength and shirt-busting size with this 12-week training, nutrition, and supplement plan.

[READ ARTICLE](#)



BUILD MUSCLE

LEAN MASS 15 SUPPLEMENT GUIDE

Complement your Lean Mass 15 workout with these supplements approved by our Editor-in-Chief



LOSE FAT

2013 SUPPLEMENT GUIDE: FAT BURNERS

Answer these questions to find out what kind of fat burner is right for you.

[READ ARTICLE](#)

BOOST WORKOUT

2013 PROTEIN SUPPLEMENT GUIDE: THE PRODUCTS

Find the right powder for you and build muscle faster than ever.

[READ ARTICLE](#)

SUPPLEMENTS

BEHIND THE SUPPLEMENT: HI-TECH PHARMACEUTICALS

HTP has 75 state-of-the-art nutritional supplements that offer real solutions in the areas of muscle and strength develo...

[READ ARTICLE](#)

SUPPLEMENTS

BEHIND THE SUPPLEMENT: AST SPORTS SCIENCE

AST Sports Science is committed to constant advancement of scientifically based sports nutrition supplements.

[READ ARTICLE](#)

BOOST WORKOUT

SUPPLEMENT OF THE MONTH: BPI PUMP-HD

An up-close look at the ingredients in BPI's new pre-workout formula.

[READ ARTICLE](#)

BUILD MUSCLE

SUPPLEMENT OF THE MONTH: MHP MYO-X

An up-close look at MHP's brand-new myostatin blocker.

[READ ARTICLE](#)



NUTRITION

OUR EXPERT WEIGHS IN ON HOW TO GET THE MOST OUT OF YOUR SUPPLEMENTS

Our expert weighs in on how to get the most out of your supplements

[READ ARTICLE](#)

Supplement of the Week



BOOST WORKOUT

SUPPLEMENT OF THE WEEK: HORSE POWER X

An up-close look at Ultimate Nutrition's new pre-workout formula.

[READ ARTICLE](#)

ENTER FOR A CHANCE TO WIN A YEAR OF SUPPLEMENT SAMPLES!



WHAT'S MY NAME?!

ENTER NOW

Be clever, be creative, and be in the running! Enter now with a saucy, clever name!

NEWS

NAME THAT SUPPLEMENT BOX AND WIN A PRIZE!

Come up with a new name for our supplement box and win a year of samples!

[READ ARTICLE](#)



SUPPLEMENTS

IMPROVE YOUR DIET WITH THESE HEALTHY FAT SUPPLEMENTS

A guide to healthy fat supplements that will help you bulk up and keep the bad fats at bay

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENT OF THE WEEK: ISOPURE ZERO CARB

An up-close look at the whey protein powder.

[READ ARTICLE](#)



BOOST WORKOUT

SUPPLEMENT OF THE MONTH: AMIN.O. ENERGY CHEWABLES

An up-close look at the Optimum Nutrition product.

[READ ARTICLE](#)



[READ ARTICLE](#)



SEX

MALE SUPPLEMENT X-ROCK RECALLED

Manufacturer recalls sexual supplement because of unlisted ingredients.

[READ ARTICLE](#)



SUPPLEMENTS

WHY SUPPLEMENTING WITH CREATINE, WHEY AND CLA SIMULTANEOUSLY WILL BOOST YOUR PERFORMANCE

The reason you may want to start stacking creatine, whey and CLA

[READ ARTICLE](#)



LOSE FAT

6 FAT FIGHTING SUPPLEMENT TIPS

M&F shares the secrets to shedding fat and getting lean.

[READ ARTICLE](#)



ACTIVE LIFESTYLE

TAKE THE SIX STAR SUPPLEMENT SURVEY

Six Star has a full line of products and is interested in hearing from you.

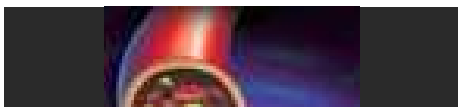
[READ ARTICLE](#)



BUILD MUSCLE

ROCK HARD CHALLENGE 2014 SUPPLEMENTS

[READ ARTICLE](#)



UNCATEGORIZED

SUPPLEMENT TIPS WITH DR. JOSE ANTONIO

Supplement advice from renowned expert Dr. Jose Antonio.



ACTIVE LIFESTYLE

VOTE FOR THE BODY BUILDING.COM SUPPLEMENT OF THE YEAR

The 2009 BodyBuilding.com Supplement awards are underway and this year promises to be better than EVER.

[READ ARTICLE](#)



SUPPLEMENTS

NEXT LEVEL: SUPPLEMENTS FROM GAT

Supplements to set you on the best path towards achieving your muscle-building goals.

[READ ARTICLE](#)



BOOST WORKOUT

GNC TO BOOST TESTING PROCEDURES ON SUPPLEMENTS

GNC and the New York State attorney general's office are working together to keep you safe.

[READ ARTICLE](#)



SUPPLEMENTS

TOP 10 BULKING SUPPLEMENTS FOR 2017 [SPONSORED]

Once again, Strong Supplement customers have spoken as votes and reviews have been tallied, here are the top 10 bulking ...

[READ ARTICLE](#)



BUILD MUSCLE

THE 2019 STARTER'S GUIDE STACK

Power your 2019 Starter's Guide training program with these supps.

[READ ARTICLE](#)



BUILD MUSCLE

SUPP OF THE MONTH: MISSION1 BARS

At long last, a protein bar without the junk.

[READ ARTICLE](#)



BUILD MUSCLE

11 BEST SUPPLEMENTS FOR BUILDING MASS

Get the best bulk-building supplements for cheap.

[READ ARTICLE](#)



SUPPLEMENTS

SUPPLEMENTS YOU SHOULD TAKE EACH SEASON

Find out which supplements you should be taking to stay healthy all year.

[READ ARTICLE](#)



SUPPLEMENTS

SUPPLEMENT SAFETY 101

Avoid sketchy supps with these simple guidelines.

[READ ARTICLE](#)



NEWS

THIS SUPPLEMENT MAY REVERSE INFERTILITY RATES

But don't rush out to the health store just yet.

[READ ARTICLE](#)



SUPPLEMENTS

5 SUPPS TO BEAT FALL AND WINTER BLUES

These natural supps will work wonders to elevate your mood and performance.

[READ ARTICLE](#)



INTERVIEWS

SUPPLEMENT COMPANY EXECUTIVE PROFILE: KELLY CONKLIN

ProSource Vice President Embarks on A New Venture

[READ ARTICLE](#)



SELECTIONS.

[READ ARTICLE](#)



BOOST WORKOUT

NOOTROPICS: CAN SUPPS MAKE YOU SMARTER?

Is better brainpower simply a food, pill, vitamin, or supplement away?

[READ ARTICLE](#)



HERS SUPPLEMENTS

7 NATURAL SUPPLEMENTS TO BOOST YOUR FAT BURN

These supps will turn up the heat on your fat-burning goals.

[READ ARTICLE](#)



HERS SUPPLEMENTS

HERS 2016 STARTER'S GUIDE SUPPLEMENTS

Keep the muscle momentum going by feeding your body with the right supps.

[READ ARTICLE](#)



BUILD MUSCLE

13 LITTLE-KNOWN BENEFITS OF TOP SUPPS

We go beyond the labels of these highly rated supps to give you their benefits.

[READ ARTICLE](#)



BUILD MUSCLE

5 DIVERSE PROTEIN OPTIONS FOR EVERY DIET

Have you hit a plateau? Diversify your protein intake for bigger gains.

[READ ARTICLE](#)



BUILD MUSCLE

6 SUPPS TO RAISE YOUR TESTOSTERONE

Help your body increase its testosterone levels.



SUPPLEMENTS

TOP 10 PREWORKOUT SUPPLEMENTS FOR 2019

Check out the list based Strong Supplement's customer metrics. [sponsored]

[READ ARTICLE](#)



BUILD MUSCLE

THE 9 BEST SUPPLEMENTS AND HOW TO TAKE THEM

Here's how and when you should implement these muscle-building supps.

[READ ARTICLE](#)



BUILD MUSCLE

5 KEY INGREDIENTS TO BOOST TESTOSTERONE

Check for these five key ingredients the next time you reach for a T-booster.

[READ ARTICLE](#)



BOOST WORKOUT

SUPPLEMENT SPOTLIGHT: FUEL UP WITH THESE PRE-WORKOUTS INGREDIENTS

You have the motivation, now here's the supplementation so you can crush each workout.

[READ ARTICLE](#)



BOOST WORKOUT

THE TOP 10 PRE-WORKOUT SUPPLEMENTS FOR 2018

Strong Supplement lays out the top contenders. [SPONSORED]

[READ ARTICLE](#)



SUPPLEMENTS

THE TOP 10 PRE-WORKOUT SUPPLEMENTS FOR 2018 [SPONSORED]

Strong Supplement Shop has the top contenders.

[READ ARTICLE](#)



HERS SUPPLEMENTS

3 SUPPLEMENT STAPLES TO LOOK AND FEEL YOUR BEST

Upgrade your fitness (and health) with these naturally-derived supps.

[READ ARTICLE](#)



BUILD MUSCLE

SUPP OF THE MONTH: DYMATIZE ISO100 WHEY PROTEIN ISOLATE

Your perfect workout partner for gains in muscle size and strength.

[READ ARTICLE](#)



LOSE FAT

BEST ON-THE-GO SUPPLEMENT DRINKS

Supplementation has gotten easier—just squeeze and go!

[READ ARTICLE](#)



ACTIVE LIFESTYLE

8 BEST NATURAL SUPPS FOR BETTER SEX

Find the natural way to perform your best at what comes natural.

[READ ARTICLE](#)



BUILD MUSCLE

MAXIMIZE YOUR WORKOUT GAINS WITH DYMATIZE SUPPS

It's the ultimate trifecta for high-performance training and optimal muscle growth.

[READ ARTICLE](#)



NUTRITION

TOP 6 SUPPLEMENT INGREDIENTS FOR BUILDING MUSCLE

Ingredients to look for in pre- and post-workout supplements.

[READ ARTICLE](#)



[READ ARTICLE](#)



BOOST WORKOUT

STRONG SUPPLEMENTS WINS TOP HONORS AS ONLINE RETAILER [PRESS RELEASE]

The company ranks in the top 97 of North American online retailers.

[READ ARTICLE](#)



BOOST WORKOUT

TOP 5 NATURAL SUPPLEMENTS FOR BETTER SEX

Take your sex life from "eh" to "ahhh-MAZING".

[READ ARTICLE](#)



HERS SUPPLEMENTS

MAXIMIZE FAT BURN

Preserve lean muscle mass with these key ingredients

[READ ARTICLE](#)



HERS SUPPLEMENTS

BEST BEAUTY SUPPLEMENTS

For healthier hair, skin, and nails, these 10 supplements are key.

[READ ARTICLE](#)



BUILD MUSCLE

TOP 10 NATURAL CUTTING & BULKING SUPPLEMENTS FOR 2017 [SPONSORED]

We've got the list for adding more lean muscle and getting shredded.

[READ ARTICLE](#)



NUTRITION

TOP 10 NATURAL CUTTING & BULKING SUPPLEMENTS FOR 2017

We've got the list for adding more lean muscle and getting shredded.



BUILD MUSCLE

6 SUPPLEMENTS FOR BUILDING MASS

If you're looking to add mass, take these supps.

[READ ARTICLE](#)

HERS SUPPLEMENTS

5 FEMALE-FRIENDLY MUSCLE-BUILDING SUPPLEMENTS

Looking to build more muscle? Here are the five products that you cannot live without.

[READ ARTICLE](#)

NUTRITION

7 HEART-HEALTHY OILS TO SUPPLEMENT YOUR DIET

The bodybuilder's guide to choosing the perfect bottle of oil.

[READ ARTICLE](#)

HERS SUPPLEMENTS

THE BEST SUPPLEMENT TO BOOST YOUR SEX LIFE

Love Spell will ignite your libido and add passion back into your bedroom.

[READ ARTICLE](#)

HERS SUPPLEMENTS

THE NEW SUPPLEMENTS THAT INCREASE STRENGTH WHILE REDUCING FAT

A brand-new line of supplements, designed specifically for women, helps you increase strength and lean muscle while redu...

[READ ARTICLE](#)

LOSE FAT

9 FAT-FIGHTING SUPPLEMENT COMBOS

These super supplement combinations will crank up the heat on your fat-loss efforts.

[READ ARTICLE](#)



HERS SUPPLEMENTS

5 CUTTING-EDGE FAT-BURNING SUPPLEMENTS

If diet and exercise aren't making you lean enough, consider one of these five cutting-edge fat-burners.

[READ ARTICLE](#)



LOSE FAT

HOW TO CHOOSE A WEIGHT LOSS SUPPLEMENT

Knowing what to look for on a label goes a long way toward making sure you're not being scammed.

[READ ARTICLE](#)



BUILD MUSCLE

THE 2015 SPRING PRODUCT GUIDE: POST WORKOUT SUPPLEMENTS

[READ ARTICLE](#)



BUILD MUSCLE

THE 2015 SPRING PRODUCT GUIDE: INTRA-WORKOUT SUPPLEMENTS

Keep your workout going strong with these unique amino acid products.

[READ ARTICLE](#)



BOOST WORKOUT

THE 2015 SPRING PRODUCT GUIDE: PRE-WORKOUT SUPPLEMENTS

Get more energy, lift more weight, burn more fat.

[READ ARTICLE](#)



RECOVER

COULD SAFFRON BE THE NEXT BIG WEIGHTLIFTING SUPPLEMENT?

New study indicates taking saffron could boost muscular strength and reduce soreness.

[READ ARTICLE](#)



of your list.

[READ ARTICLE](#)



SUPPLEMENTS

4 SUPPLEMENTS TO MAINTAIN MUSCLE AND LOSE FAT

Keep that hard-earned muscle while dropping fat with these supps.

[READ ARTICLE](#)



BUILD MUSCLE

8-WEEK HYPER GROWTH SUPPLEMENT STACK

Get shredded with David Sandler's supplement picks for developing lean mass.

[READ ARTICLE](#)



BUILD MUSCLE

4 MUST HAVE SUPPLEMENTS FOR PHYSIQUE BUILDING

Get super-sized and enjoy abundant health with this array of must-have supplements.

[READ ARTICLE](#)



LOSE FAT

SUPPLEMENT SPOTLIGHT: GET SHREDDED WITH FAT BURNERS

Think all fat-burning supplements work the same? Think again. Consider all these ways to help you increase your fat loss...

[READ ARTICLE](#)



GAIN MASS

CLEAR RESULTS SUPPLEMENTS: CLEAR WAY TO MAKE GAINS

MuscleTech's new product provides a potent twist on HMB.

[READ ARTICLE](#)



BUILD MUSCLE

GROWTH FACTORS: GET GROWING WITH THIS SUPPLEMENT PAIRING

Get the most from your workouts by pairing supplements that work through different pathways.



RECOVER

M&F SUPPLEMENT PICKS: FOUNTAIN OF YOUTH

Supplements become more and more important as we age, allowing us to recapture what nature takes. Here are two that ever...

[READ ARTICLE](#)



BOOST WORKOUT

EDITOR'S SUPPLEMENT PICK: BPI PUMP-HD

Get the most mileage out of your workout with this powerful pre-workout supplement.

[READ ARTICLE](#)



NEWS

ARNOLD RELEASES SUPPLEMENT LINE

MusclePharm to launch new Arnold Series.

[READ ARTICLE](#)



NEWS

ARNOLD SCHWARZENEGGER TO RELEASE NEW SUPPLEMENT LINE

The bodybuilding icon teams up with MusclePharm to launch the new Arnold Series.

[READ ARTICLE](#)



BOOST WORKOUT

3 SUPER SUPPLEMENTS FOR MEN OF ALL AGES

Need an extra edge in the gym? These supps for fitness fanatics over 30 will do the trick.

[READ ARTICLE](#)



BOOST WORKOUT

NATURE'S BEST ISOPURE WITH COFFEE

An up-close look at Nature's Best whey protein powder—with a jolt.

[READ ARTICLE](#)



BOOST WORKOUT

MARC MEGNA'S ROCK HARD SUPPLEMENT REGIMEN

[READ ARTICLE](#)



BOOST WORKOUT

FEATURED SUPPLEMENT: OPTIMUM NUTRITION PLATINUM PRE-WORKOUT

Learn how Optimum's new Pre- can power you through your workout and improve your muscle-building potential.

[READ ARTICLE](#)



BOOST WORKOUT

2013 FAT BURNERS SUPPLEMENT GUIDE: PRODUCTS

Find the right powder for you and build muscle faster than ever.

[READ ARTICLE](#)



NEWS

TAKE A LOOK AT THE LATEST SUPPLEMENT INNOVATION FROM MHP

Take a look at the latest supplement innovation from MHP

[READ ARTICLE](#)



BUILD MUSCLE

THE M&F FEBRUARY SUPPLEMENT SAMPLE BOX

BPI Sports expands its line of muscle-building products.

[READ ARTICLE](#)



BUILD MUSCLE

THE M&F JANUARY SUPPLEMENT SAMPLE BOX

Try it all! Our sample program lets you experiment with supps like you do with training.

[READ ARTICLE](#)



[READ ARTICLE](#)



GAIN MASS

HOW TO SURVIVE WITHOUT YOUR BODYBUILDING SUPPLEMENTS

Stuck in a situation without your supps? Try this meal plan to recreate their effects.

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENT OF THE WEEK: ISO MASS XTREME GAINER

How Ultimate Nutrition's Iso Mass Xtreme Gainer can help you build muscle.

[READ ARTICLE](#)



NUTRITION

HYPER GROWTH LEAN MASS SUPPLEMENT STACK

Get shredded with David Sandler's supplement picks for developing lean mass.

[READ ARTICLE](#)



BUILD MUSCLE

SUPPLEMENT OF THE MONTH: MHP T-BOMB II

Take an up-close look at this testosterone booster.

[READ ARTICLE](#)



NUTRITION

THE FRUIT OF THE VINE CONTAINS A MULTITUDE OF BENEFICIAL SUBSTANCES CALLED POLYPHENOLS.

The fruit of the vine contains a multitude of beneficial substances called polyphenols.

[READ ARTICLE](#)



GAIN MASS

CARB BACK-LOADING, EPISODE 18: STOPPING SUPPLEMENTS

M&F Group Training Director Sean Hyson talks to John Kiefer about whether you should cycle supplements to avoid developi...



LOSE FAT

SUPPLEMENT OF THE MONTH: MUSCLETECH HYDROXYCUT HARDCORE ELITE

An up-close Look At MuscleTech's clinically supported fat burner

[READ ARTICLE](#)

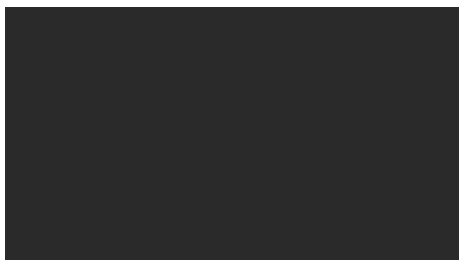


BUILD MUSCLE

THE M&F MARCH SUPPLEMENT SAMPLE BOX

Join the Muscle & Fitness Jacked-in-a-Box program and get all the supplements you need to get jacked.

[READ ARTICLE](#)



ROCK HARD MONTH 2 SUPPLEMENT STACK

[READ ARTICLE](#)



ROCK HARD MONTH 1 SUPPLEMENT STACK

[READ ARTICLE](#)



UNCATEGORIZED

2011 SUPPLEMENT BUYER'S GUIDE - PART 2: RECOVERY

Senior science editor Jim Stoppani gives a breakdown on everything you need to know about recovery supplements.

[READ ARTICLE](#)

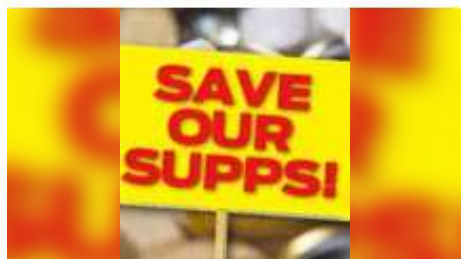


FLEXONLINE

POLL: WHAT'S YOUR PREFERRED WAY TO TAKE SUPPLEMENTS?

What's your preferred method to taking supplements?

[READ ARTICLE](#)



ACTIVE LIFESTYLE

DON'T LET CONGRESS TAKE AWAY YOUR SUPPLEMENTS

Two senators introduced a bill that will limit your freedom of choice when it comes to supplements

[READ ARTICLE](#)

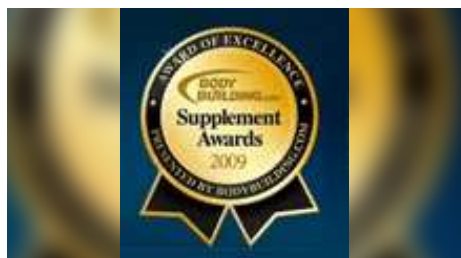


FLEXONLINE

DON'T LET CONGRESS TAKE AWAY YOUR SUPPLEMENTS

Two senators introduced a bill that, if passed, will limit your freedom of choice

[READ ARTICLE](#)



ACTIVE LIFESTYLE

BODY BUILDING.COM ANNOUNCES 2009 SUPPLEMENT AWARDS

Bodybuilding.com has announced a new and innovative way to help customers find truly exceptional products and brands, wh...

[READ ARTICLE](#)



UNCATEGORIZED

EXPERT QUICK TIP: DR. KREIDER -SUPPLEMENT EXPERT

We managed to corner one of the world's foremost experts on nutritional supplements, and asked him to provide you with qu...

[READ ARTICLE](#)

[LOAD MORE](#)

STAY UP TO DATE

Sign up below to receive our newest workout routines, recipes, news stories, and offers from our partners

Enter Your Email Address

I want content for... Both Men Women

- Muscle and Fitness Promotions
- Muscle and Fitness Hers Promotions

[SUBSCRIBE](#)

FOLLOW US



EXHIBIT G



اصدار فلديس باللغة العربية

FFLEX

Middle East

PICTURE OF THE WORLD CHAMPION NASSER MIRZA

www.flexonline.com



FLEX MIDDLE EAST • JUNE 2010 • THE NEW WAY TO GET BIG • THE BEST PHOTO SHOOT OF ALL TIME

TORCH YOUR TRI'S

PLUS BEEF UP YOUR CHEST

5 WAYS TO GET STRONGER

>>> GREENEVS. HEATH AT THE ARNOLD
>>> BIG BACK ATTACK
>>> ROCK-HARD ABS

BEST FAT BURNING SUPPLEMENTS
AED 15 ONLY



JUNE 2010 flexonline.com

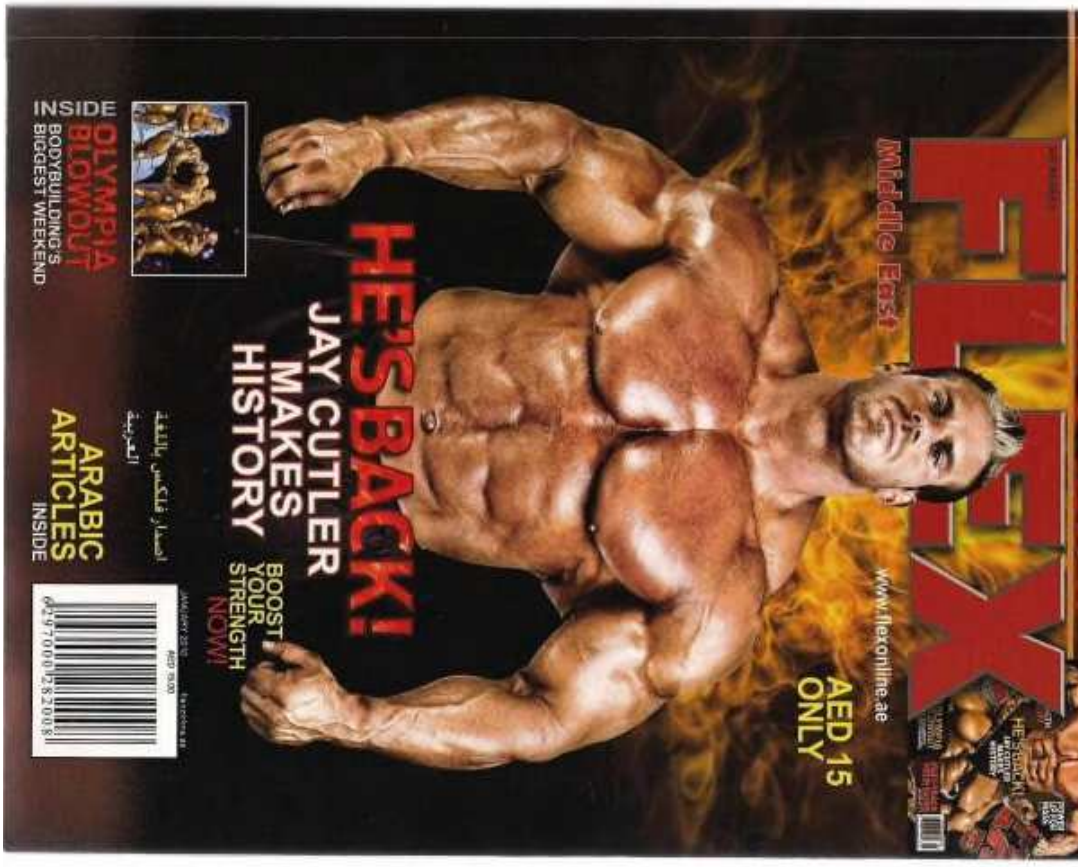
NOW IN THE MIDDLE EAST
PREMIERE EDITION

FFLEX

Middle East

www.flexonline.ae

AED 15 ONLY



HE'S BACK!

JAY CUTLER MAKES HISTORY

BOOST YOUR STRENGTH NOW!

INSIDE OLYMPIA BLOWOUT BODYBUILDING'S BIGGEST WEEKEND

ARABIC ARTICLES INSIDE



JUNE 2010 flexonline.com

اصدار فلديس باللغة العربية

LIVRET GRATUIT À L'INTÉRIEUR: VOTRE GUIDE DE A À Z DES SUPPLÉMENTS POUR LA MUSCULATION!

EDITION FRANÇAISE

FILEX

DOSSIER:
L'ENTRAÎNEMENT
D'ARNOLD

SES ENTRAÎNEMENTS
INÉDITS POUR

- ▶ LES PECS
- ▶ LE DOS
- ▶ LES CUISSES
- ▶ LES MOLLETS
- ▶ LES ABDOS

**DES BRAS
AU TOP**
Deux séances
barbares pour
les bras

100 FAÇONS DE
SE MUSCLER
AVEC NOTRE NOUVEAU
PROGRAMME BARBARE

PLUS | LE VRAI FRANCIS BENFATTO
Rétrospective sur une superstar du bodybuilding

Parfois 245 cm
Biceps 96 cm
Tibias 85 cm
Cuisse 92 cm
47 en pied

ISSN 1145-2868
Avec 100 pages de conseils et de recettes
Avec 100 photos de Francis Benfatto
L'ÉDITION FRANÇAISE
L'ÉDITION FRANÇAISE
L'ÉDITION FRANÇAISE

UN PHYSIQUE ÉNORME EN 2015 - SUIVEZ LE GUIDE!

80
ASTUCES DE
35 STARS

DES ALIMENTS
JUSTEMENT
CIBLÉS

ÉCORCHÉ
EN HUIT
SEMAINES
AVEC NOTRE
PRÉPARATIVE
CIBC

15
ASTUCES POUR
BOOSTER VOTRE
RÉGÈNE

LES THÈMES DE CE N° | LE DOS DE DUBILEN | DES PÉCS MASSIVANTS

APRÈS LE
MUSCULATION

FILEX

KAI GREENE
LES 50 MEILLEURES
RECETTES

ISSN 1145-2868
Avec 100 pages de conseils et de recettes
Avec 100 photos de Kai Greene
L'ÉDITION FRANÇAISE
L'ÉDITION FRANÇAISE
L'ÉDITION FRANÇAISE



