



**Anabolic Steroids, Optimum Nutrition and  
Exercise Therapy for HIV-related  
Wasting and Lipodystrophy  
*A Summary***

**Excerpt from the book “Built to Survive”**

**By Michael Mooney and Nelson Vergel**

# POWeR

**Program for Wellness Restoration**

P.O. Box 980741, Houston, Texas 77098, phone (713) 520-6630, fax (713) 526-5883  
 email: [powertx@aol.com](mailto:powertx@aol.com), [mmooney@medibolics.com](mailto:mmooney@medibolics.com), web site - <http://www.medibolics.com>

## Program For Wellness Restoration Guidelines

Anabolic steroids are rapidly becoming a common therapy in HIV disease to prevent and reverse the loss of Lean Body Mass (LBM). These compounds have been used since the mid-1980's by progressive doctors in Los Angeles and are now being used by many doctors around the country with no standard of care guidelines. There is no need for HIV(+) people to waste due to their doctor's lack of training and misinformation about the clinical uses of anabolic steroid therapy. It is our purpose to gather information from different sources, doctors, researchers, bodybuilders, and experienced HIV(+) individuals and make this information available to people living with HIV and their medical providers.

### Men's Versatile Guidelines Chart (Email PoWeR for women's and pediatrics guidelines.)

In the table below, options are given for use of nandrolone decanoate (Deca Durabolin) at lower and higher doses. The PoWeR cycle is the combination of nandrolone and testosterone in an escalating and de-escalating pattern. Men require that testosterone be included with nandrolone (or any other anabolic) so that they have normal libido, since all anabolic steroids reduce the body's production of testosterone. This sustains optimum quality of life with less potential for side effects associated with high-dose testosterone use.

**N: Nandrolone Decanoate (Deca Durabolin) T: Testosterone enanthate or cypionate**

Cycle	One	Two	Three
Week	Moderate Dose Nandrolone	Higher Dose Nandrolone	PoWeR Cycle* - Testosterone And Nandrolone
1	100 mg N/100 mg T	100 mg. N/100 mg T	100 mg T
2	100 mg. N/100 mg T	100 mg. N/100 mg T	200 mg T + 100 mg N
3	200 mg. N/100 mg T	200 mg. N/100 mg T	300 mg T + 200 mg N
4	200 mg. N/100 mg T	300 mg. N/100 mg T	300 mg T + 200 mg N
5,6,7	200 mg N/100 mg T	400 mg. N/100 mg T	400 mg T + 300 mg N
8	200 mg N/100 mg T	300 mg. N/100 mg T	300 mg T + 300 mg N
9	100 mg. N/100 mg T	200 mg. N/100 mg T	200 mg T + 200 mg N
10	100 mg. N/100 mg T	100 mg. N/100 mg T	100 mg T + 200 mg N
11	100 mg. N/100 mg T	100 mg. N/100 mg T	100 mg N
12	100 mg. N/100 mg T	100 mg. N/100 mg T	100 mg. N
13			
14	HCG - 2000 IU every other day for 5 injs. or 5000 IU once/week for 4 weeks. Arimidex at 1 mg/day for 8 weeks. After HCG ends begin Clomid at 50 mg twice/day for 4 weeks.		HCG - 2000 IU every other day for 5 injs. or 5000 IU once/week for 4 weeks. Arimidex at 1 mg/day for 8 weeks. After HCG ends begin Clomid at 50 mg twice/day for 4 weeks.
	<b>Low and moderate doses cycles.</b> Good basic cycles to follow after patient reaches desired LBM. For some, one of these cycles alone is effective enough to reach goal LBM. Others need the higher dose cycles, then use one of these combinations. 16+ week break after cycle.	<b>Reversal Cycle.</b> For those who don't respond to moderate or higher dose cycle, or who've lost over 10% of normal weight, or whose stamina is very low. After cycle, take 16 week break, monitoring biweekly for LBM loss. Loss of over 20% of LBM gained during cycle, means a maintenance cycle should be instituted until the next cycle.	

Once the physician is familiar with anabolic steroid therapy, he/she may want to consider using the PoWeR cycle as their first cycle to bring patients up to optimal LBM levels and quality of life. Nelson Vergel, the founder of PoWeR, and many of PoWeR's clients, began their anabolic steroid therapy with a PoWeR cycle, and have gained over 20 pounds of LBM within 12 weeks, while considerably reducing fat mass (potentially reducing lipodystrophy). As a result they are experiencing better productivity and health. Anabolic steroid therapy is most effective when an enhanced protein, moderately hypercaloric diet is maintained consistently, along with resistance weight-training (45 - 60 minutes, three to four times a week) and optimal micronutrients. We recommend a protein rich diet of whole foods, fresh fruits and vegetables which may be supplemented with a protein powder supplement taken 1-2 times daily, and **SuperNutrition's Opti-Pack** or **Super Blend** daily vitamins to insure adequate levels of macro and micronutrient intake. PoWeR's recommended guidelines for daily protein intake are 0.8 to 1 gram of protein per pound of ideal body weight. Optimal fluid intake (8 - 10 glasses of water per day) is also important.

## What To Do Before You Start The PoWeR Program

1. **Information:** Get the **BUILT TO SURVIVE** book by calling 1-800-350-2392 . It contains details about the program (nutrition, supplementation, exercise, anabolic steroid information and lots of scientific references to show your doctor). You may want to also subscribe to PoWeR's newsletter "**Medibolics**" by sending a check or money order for \$20 to: Medibolics. P.O. Box 333, 836 N. La Cienega Blvd., West Hollywood, CA 90069. Call Nelson Vergel at the above number if you are interested in bringing a free **PoWeR seminar** to your location. If you have Internet access, visit our web site at <http://www.medibolics.com> or e-mail us at [powertx@aol.com](mailto:powertx@aol.com) for Nelson or [mmooney@internetconnect.net](mailto:mmooney@internetconnect.net) for Michael. PoWeR is a volunteer non-profit organization that relies solely on private donations to continue its work, so any donations are welcome. Send your tax-deductible donations to: PoWeR. P.O. Box 980741. Houston, Texas 77098.

2. **Body composition and nutritional counseling:** Get a baseline **bioelectrical impedance analysis (BIA)** done to determine your body composition at baseline. If in Houston, call the Body Positive Wellness Center (713-524-2374) to set up an appointment free of charge. Get BIA done again every 3 months after that. If not in Houston, call your largest HIV/AIDS agency or clinic (or Statscript Pharmacy) to find out who provides BIA and nutritional counseling in your location, or visit [www.medibolics.com](http://www.medibolics.com). Tell your doctor that he/she should consider providing these important services which would be covered by insurance. Also, call **RJL Systems**, makers of one of the most popular BIA machines, at 1-810-790-0200 to ask them who may be using their BIA machine in your city.

3. **Micronutrients and protein:** Call the **Houston Buyer's Club (800-350-2392 or 713-520-5288)** to order a vitamin (**Opti-Pak or Super Blend**) and protein supplement. Follow the nutritional instructions in Built To Survive. Both supplements will cost around \$60 a month (total). Other HIV buyer's clubs which carry these products are: Wholesale Health (Florida) - (888) 666-6743, DAAIR (New York) - (212) 725-6994, and Boston (800) 435-5586. Remember to maximize protein, complex carbohydrates (fruits, vegetables, legumes, greens), water, and minimize sugars and processed grain starches.

4. **Physician:** For those who wish to participate in the use of anabolic steroids, you are encouraged to enroll your own physician. Present the PoWeR protocol to your physician that is outlined in Built To Survive. If your physician will not prescribe the steroids, be aware that there are numerous physicians who will prescribe anabolic steroids for wasting due to HIV disease. Call (800) 350-2392 e-mail us for a doctor referral. If your doctor needs to speak to another physician about anabolic steroid use for HIV, have him/her call Dr. Shannon Schrader (713-520-5537) or Dr. Patricia Salvato (713-961-7100). They have over 100 patients on this program with documented results over the past three years. There are over 200 physicians now prescribing anabolic steroids in the U.S. to treat loss of lean body mass and lipodystrophy (fat re-distribution) in HIV positive people (see article at the end of this document).

5. **Prescription:** The prescription for the PoWeR cycle should include nandrolone decanoate (or Deca-Durabolin) - 12 vials of 200 mg/ml, administered once per week), Depo-Testosterone (or testosterone cypionate or testosterone enanthate, 10 cc's, 200 mg/ml, 2 vials, administered once per week), human chorionic gonadotropin (HCG) - 10,000 USP, 2 vials, as directed in the chart, Arimidex 1 mg per day, and Clomid - 60 tablets at 50 mg each taken twice per day, as directed in the chart. Vitamin B-12 (30 cc's, 1000 mcg/ml, 2 vials, 2 - 2 cc shots a week). Get at least 20 syringes (23 gauge, 1 inch plus 20 additional needles of 20 gauge to load the steroids into the syringe. You can have your pharmacist call Watson Pharmaceuticals directly for deca durabolin or you can order it directly with [www.GulfSouthRx.com](http://www.GulfSouthRx.com)

6. **Resistance Weight Training:** Resistance exercise is key to the success of your program. Join a gym if you have the means and do not have a membership. If you have very limited finances and are in Houston, call the Body Positive Wellness Center (713-524-2374). In other cities, call your local YMCA and find out if they have a scholarship program for people on disability or with limited income. Also, find a friend who wants to work out with you. Follow the exercise recommendations described in Built To Survive. Keep track of your progress with a work-out log. Also, visit [www.hivfitness.org](http://www.hivfitness.org) and [www.medibolics.com](http://www.medibolics.com) for more information on exercise and HIV.

# POWER

Program for Wellness Restoration

## Anabolic Steroids For AIDS Therapy: Differences Between Analogs

This table is designed to clear up some of the misconceptions regarding anabolic steroids as therapeutic agents for AIDS-related wasting therapy. Specifically, some anabolic steroids are rather benign compared to other more problematic steroids. This table is a guide to weighing the relative risks to benefits for some of the common steroid analogs that are available in the United States and other countries. It merges anecdotal information from my survey of doctors and athletes over many years and the published data. Please note, studies show that anabolic steroids may support cell mediated immune function.<sup>1 2 5 6 14</sup> All anabolic steroids can inhibit the body's production of its own testosterone, and all can produce side effects when the dose is high enough.

Steroid	Anabolic	Androgenic	Effects/ Side Effects/ Reported Dosages
Nandrolone Decanoate ★★★★★ Trade name is Deca Durabolin (injections) <b>A best steroid for men</b> Available in the USA/foreign	high	low to medium	Very good lean muscle growth. For men, 100-400 mg per week is relatively safe for three month anabolic cycles. A 12 week NIH-funded men's HIV study used 600 mg per week. Can cause some water retention. May decrease libido if used without testosterone. For women 25 mg per week up to 50 mg for severe wasting only (chance of virilization).
Methenolone ★★ Trade name is Primobolan Depot (injections) <b>A best steroid for women.</b> Available in Europe, Mexico	Low to Medium	the lowest	The "cleanest", gentlest anabolic steroid, presents the least chance of virilizing, no water retention, 100-600 mg/week for men, 25 mg to 100 mg for severe wasting in women. Primobolan is very weak, though, generally too weak for men.
Methenolone/Primobolan ★ (Oral = tablets) Availability same as injectable. <b>Good steroid for women</b>	low to medium	Lowest	Same as above, 50-200 mg/day for men, up to 100 mg/day for women. This oral steroid is not 17-alkylated and is safe for the liver.
Stanozolol ★★ Trade name is Winstrol (injections) This product is not available in the US. Included here because some PWA's obtain it from overseas sources and self-administer.	medium	Low	Some growth, no water retention, very slight chance of virilizing for women, injections need to be every 2-3 days. Pyrogenic (fever-causing), Although we haven't seen liver toxicity at the doses men are using, watch liver GGT, bilirubin readings as this water-based injectable is 17-alpha alkylated. Men - 50 mg 2-3 x/week. Best used with testosterone, as it does not have enough androgenic potential for full androgen function in the body.
Stanozolol ★★★★★ Trade name Is Winstrol (Oral) Available in the US. <b>Cost effective - 42 cents/ mg</b>	medium	Low	Men need 6-28 mg. per day. No water retention, watch liver enzymes. Best used with testosterone, as it does not have enough androgenic potential for full androgen function in the body.
Oxandrolone ★★ (Oxandrin) (Oral) <b>Good steroid for women/children</b> Oxandrin is available in US pharmacies. Good compassionate use program for those with limited income and uninsured. <b>Too expensive. \$1.50/ mg</b>	low to med	very low	For women, 5-15 mg per day. For children, 1/10th mg per kg of bodyweight or 2.5 mg per day. Does not stunt growth in children. For men, 20 mg or more per day added to 100-200 mg per week of testosterone. Possible liver toxicity at doses above 20 mg per day for adults. May interact with the P450 3A4 enzymes that metabolize protease inhibitors. Some HIV(+) women report water retention.
Oxymetholone ★★ Trade name Anadrol 50 (oral) Available in the US.  Good compassionate use program. <b>Very cost effective, 24 cents/ mg</b>	very high	very high	For men, 10-100 mg per day. Most powerful, least costly oral steroid for building muscle. Unlike other steroids Anadrol supports libido. Dose-related potential for hair loss, increased blood pressure, water retention, body hair growth, gynecomastia, etc. Should not be used with testosterone, as this increases the potential for side effects. Men typically cut tablets in fourths, and take one quarter 2 - 4 times per day.
Testosterone Cypionate or Enanthate ★★★★★ (Injections) Inexpensive.	high	medium to high	Excellent lean muscle growth, water retention, potential for balding, acne, gynecomastia, Men 100-200 mg/week, strong injectable for libido, may virilize women, see note #3.

Excerpted from the book "Built to Survive" by Michael Mooney and Nelson Vergel

**Notes:**

Five stars = highest rating; one star = lowest rating. Some good muscle-building steroids are given lower ratings because they may have more potential for side effects.

1. Nandrolone decanoate, a generic drug, should cost about \$14.00 (California price) for a 200 mg bottle, whereas Deca Durabolin (trade name by Organon) costs about \$30.00 for the same compound. Buy the generic version, if possible. Question any pharmacist who says they can't get nandrolone. They make more money on Deca. Except for two periods during the last five years, generic nandrolone has been readily available everywhere in the US. (It was not available at press time, April, 1999.)

2. Some studies show that specific anabolic steroids have beneficial effects on specific immune functions.<sup>1 2 5 6 14</sup> Differences in how specific anabolic steroids affect the immune system in HIV should be studied. Many AIDS doctors prescribe testosterone and the other anabolic steroids and see improvements in critical components of the immune system, such as CD8 T cells.<sup>14</sup> Studies show that testosterone can delay the progression of immune diseases, like the autoimmune disease lupus.<sup>7</sup>

3. Common oral/tableted steroids are 17-alpha alkylated. This presents a burden to the liver that can cause an increase in liver-specific blood tests because they may be somewhat toxic to the liver in a dose-dependent manner. Injectable steroids, except injectable stanozolol (not sold in the US), which is 17-alpha alkylated, do not cause any significant liver burden.<sup>3 13</sup> Injectable steroids are generally preferred over oral steroids for this reason. However, injectable steroids may appear to cause elevations in multi purpose liver function tests (SGOT, SGPT, and LDH) during increased muscular stress or other stress in the body. Steroid-free athletes with high metabolic and muscular stress may show some elevation of some of these blood tests, too. Numerous other drugs also elevate these blood tests. Liver test elevations usually reverse with cessation of the steroids. Anecdotal evidence from competitive bodybuilders who use steroids in high doses, and published data in the medical literature suggest that the incidence of liver toxicity from oral steroids is somewhat exaggerated and rarely creates severe problems *in healthy humans*. I suggest that physicians be particularly sensitive to the discrete liver readings bilirubin, GGT, and the liver isoenzyme of LDH. Data suggests that these are more consistent indicators than the multi-purpose liver tests, like SGOT and SGPT, when looking for potential liver problems related to anabolic steroids.<sup>11 12</sup> Of course, it is prudent to respond to all aberrant liver function tests when pharmacology is complicated with compounds like the standard AIDS medications.

4. Virilizing means masculinizing. This can mean increased body hair growth, a deeper voice, etc. in males and females. Women may find that they start to get oily skin and acne, grow dark peach fuzz or a mustache or other body hair, have itching of the clitoris followed by increasing clitoral size, or develop other male characteristics with continued administration of steroids that are somewhat androgenic. These problems sometimes reverse if the steroid dose is not too high and steroid use is stopped immediately when side effects are detected.

5. Anabolic refers to the growth of muscle and is desirable for wasting therapy. Optimal lean body mass is highly correlative with survival in AIDS.<sup>4</sup> While increased androgenic potential can mean more potential for side effects and virilizing, some androgenic potential is necessary for healthy metabolism as natural androgenic activity is necessary for libido, energy, and healthy brain chemistry. Generally speaking, the less androgenic a steroid is, the less side effects there will be. However, all anabolic steroids have some androgenic potential, and steroids that have very low androgenic potential also usually have less anabolic potential.

6. The upper dosage listed for women is usually for severe wasting only. Women's bodies do not tolerate anabolic steroids as well as men in general, so doctors agree that it is best to be conservative in the dosages, except in special circumstances where there is severe wasting. The steroids that are more androgenic, like testosterone, may not be problematic if the dosage is appropriately low. It is wise to consider starting at the lowest dosage possible when women use androgens/steroids.

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This article reports on anabolic steroid use by people with HIV. Consult with your doctor about any use of anabolic steroids. These dosages are somewhat conservative and only provide a reference range, actual patient needs are highly individual. The dosage ranges given in this table have been verified by medical doctors familiar with AIDS therapy to generally cause no significant side effects when used appropriately.<sup>8-10</sup> This table was excerpted from our quarterly newsletter called MEDIBOLICS v.1, n.1, Sept. 1995 (out of print)

# Complementary Approaches To Treating Lipodystrophy

by Michael Mooney (original version in *Medibolics* 2(2), Nov. 1997)

While the protease inhibitor (PI) cocktails can bring viral loads down to undetectable levels and have given many HIV(+) people a new lease on life, protease inhibitors are not always benign drugs. As we approach year three of the triple-combo era, numerous problems have appeared among people who are on protease inhibitors. One of the most common of these side effects (and perhaps the least understood) is the protease belly or Crix belly phenomenon. Crix belly, so named because it was mostly observed among people being treated with Crixivan, is a condition most notably marked by the appearance of a large protruding potbelly. (At the same time this is happening some people report that they feel like they are losing muscle mass and fat, too, especially in the arms and legs.) Another sometimes concurrent but rare condition is the so-called buffalo hump, which is a fat pad that grows on the back of the neck that resembles what is seen in Cushing's syndrome. Women are also experiencing an increase in breast size as the breasts seem to gain fat (called lipoma), and many people are losing fat in their cheeks while one of all of these other things are happening to them. Lipodystrophy is the medical term that has been given to this syndrome, but it can also simply be called bodyfat redistribution.

It now appears that lipodystrophy is not a side effect entirely specific to Crixivan, but may be seen with the usage of any of the available protease inhibitors, and has even been seen to a lesser degree in HIV(+) people before protease inhibitors were available. However, the various cocktails of powerful drugs being used today to combat the HIV virus seem to increase the severity of this syndrome over the simpler drug combos of a few years ago. (And in some cases, the addition of the appetite stimulant Megace to the protease inhibitors seems to increase the potential for bodyfat redistribution.) There are several reasons why this might happen. Crix-belly in many respects resembles the potbelly seen in disease states like Cushing's syndrome, alcoholic hepatitis, and heart disease. In these diseases the potbelly is associated with the development of insulin resistance<sup>1-3</sup> and is primarily composed of enlarged fat deposits surrounding the visceral organs, like the stomach, and kidneys, under the abdominal muscle wall.<sup>4</sup> The potential for liver burden or toxicity induced by many of the common AIDS medications has been documented and the protease inhibitors are no exception to this rule. Elevated triglycerides, liver enzymes, and blood glucose and even diabetes have all been observed in patients on protease inhibitor therapy. All of these conditions are symptoms of diminished insulin sensitivity, so it is probable that the protease inhibitors' effects on liver metabolism are inducing a state of insulin resistance in people who are on protease inhibitor therapy. Complications of insulin resistance include hyperglycemia (high blood sugar), diabetes, and cardiovascular disease, and the FDA has documented over 80 cases of diabetes that appear to be associated with protease inhibitor therapy.

Indeed, from early 1998, numerous studies have documented an association between the use of protease inhibitors and measurements that indicate insulin resistance is present including data by Kathleen Mulligan, Ph.D. of San Francisco General Hospital, confirming that protease inhibitors can cause the blood chemistry changes that are typical of insulin resistance;<sup>61</sup> Dr. Ravi Walli of Ludwig-Maximilians Universitat Munchen in Germany reporting that peripheral insulin resistance is common in patients on protease inhibitors;<sup>62</sup> and Dr. Andrew Carr of St. Vincent's Hospital of Sydney, Australia, detailing his hypothesis of the cytoplasmic (cellular) retinoic acid-binding protein type I (CRABP-1) biochemistry involved in the liver dysfunction that may promote insulin resistance.<sup>63</sup> Additionally, some people who are using protease inhibitors are being found to have accelerated cardiovascular disease, which is also a common outcome of progressive insulin resistance. A look at Harrison's Principles of Internal Medicine shows us that lipodystrophy can be associated with insulin resistance, and so we see that the components in this puzzle, lipodystrophy; elevated triglycerides, elevated blood glucose, elevated insulin levels; diabetes; cardiovascular disease; and insulin resistance are all appearing.

While this article does not offer a cure for bodyfat redistribution as protease belly, buffalo hump, loss of facial fat, or lipoma, it offers tools that are documented to improve insulin sensitivity that may help people gain some control over this problem until medical science gains enough of an understanding to solve it.

## Does Crixivan Lower Testosterone?

Several doctors I have spoken to have told me that they have seen that Crixivan can lower testosterone production, and low testosterone production is known to correlate with increased insulin resistance in men.<sup>5</sup> In contrast, women exhibit insulin resistance when testosterone is elevated.<sup>6</sup> However, low testosterone does correlate with increased visceral fat in studies with HIV-negative women.<sup>7</sup> One study showed that about 50 percent of HIV(+) premenopausal women have low testosterone levels, which was associated with low body cell mass, and a tendency towards having fat mass that is above normal.<sup>38</sup> It may be that normalizing a testosterone deficiency while being careful about keeping testosterone blood measurements no higher than mid-normal would be beneficial to HIV(+) women to improve nutrient partitioning away from fat tissue while lean tissue increases. This is an area that needs more investigation, as not enough has been done to study testosterone and wasting in HIV(+) women. We also know that the antiretrovirals can cause muscle myopathy,<sup>8</sup> so it can be several things (including low testosterone production) that might add up to a loss of lean body mass, and an increase in visceral fat.

While it remains to be proven, one of the things that was presented by Dr. Gorbach from Tufts University when he reviewed their Nutrition for Life Cohort (600 HIV+ men during 254 days on protease inhibitor combos) at the Bethesda National Institutes of Health conference, was that although people tend to put weight back on with protease inhibitors, his data assert that they regain mostly fat, not lean tissue. Note: fat weight is *not* correlative with survival, but lean tissue is.<sup>9</sup> The loss of lean tissue and reciprocal gaining of fat so that total body weight stays the same, is typical of early stage wasting.<sup>10 11</sup> This increase in fat mass again suggests an impairment in glucose disposal and insulin sensitivity. For those who have the potbelly, I would be concerned about any apparent muscle wasting and have the blood testosterone levels checked, including both free and total testosterone. If total testosterone is low, or in some cases, even mid-normal for men, because of the tendency for HIV(+) men to have decreased free testosterone levels, which correlates with a progressive decrease in CD4 T cells,<sup>39</sup> a doctor should consider beginning testosterone replacement therapy. We should also note that free

testosterone measurements have been shown to be more correlative with lean body mass than total testosterone in wasting HIV(+) men<sup>12</sup> and women.<sup>13</sup>

Fat loss on the face and extremities has been associated with the use of Zerit (D4T). Talk to your doctor about switching to other nucleosides if you are experiencing fat loss. For more information on facial wasting and cosmetic procedures, visit [www.medibolics.com](http://www.medibolics.com)

## Women and Testosterone

Studies show that HIV(+) women who are losing lean body mass may also need testosterone,<sup>13</sup> but the appropriate dosage of testosterone enanthate injections for women is usually much lower than the dosage for men, between 2.5 and 20 mg per week. This is something for a doctor to determine by taking blood tests, usually two to three days after the fourth weekly injection for a representative average level. A number of HIV(+) women are using testosterone creams that are compounded by a pharmacy like Women's International Pharmacy (1-800-279-5708). However, testosterone enanthate injections deliver a longer-lasting blood level of testosterone than the creams, which have a relatively short life span in the body. If a cream is used, it is usually applied in a dose of between 2 and 5 mg twice times per day, while the injections are best given once per week, as studies show that testosterone blood levels generally decline to baseline within about 10 days after injection.<sup>14</sup> As women are much more sensitive to side effects from testosterone, the physician should monitor a female closely for any virilizing side effects, which include oily skin, acne, peach fuzz, hair loss, and clitoral enlargement, and immediately lower the dose or cease the therapy if these kinds of symptoms start to occur.

## Normal Testosterone Levels May Not Be Enough (Men Only)

I should also note that finding the correct testosterone dose for each individual is not always easy, as data from studies by researchers like Dr. Judith Rabkin suggest that being HIV(+) can mean that the normal range for testosterone measurements does not necessarily apply to men. In her study with HIV(+) hypogonadal men, Dr. Rabkin found that the dose of testosterone enanthate needed to be above 200 mg every two weeks, in order for a good quality-of-life. The dosage she found to be effective was 400 mg every two weeks (which I suggest is best given as 200 mg per week for more consistent blood levels, less peak/trough effect, and reduced potential for side effects). At 400 mg given every two weeks the men's blood testosterone levels averaged about 1100 ng/dL one week after the fourth injection (on a scale where the normal range is 300 to 990 ng/dL). In private correspondence Dr. Rabkin said that she is not sure whether 300 mg every two weeks would yield a satisfactory result or whether the men would respond satisfactorily if their average levels only reached 800 ng/dL. She said that some men did receive benefit at about 700 ng/dL though.<sup>15</sup> Remember, the bottom of the normal scale was 300, so the normal scale didn't seem to apply well to these HIV(+) men. Sometimes normal is just a fairy tale.

## Free Testosterone

I assert that men's apparent need for testosterone at higher than the standard replacement dose of 100 mg per week (for HIV-negative hypogonadal men) may be the result of hormonal resistance to testosterone. Hormonal resistance appears to happen with several hormones in HIV pathology. Published studies suggest that the need for higher testosterone doses may be caused by elevated sex-hormone binding globulins and lowered free testosterone, which is common in HIV.<sup>39 42</sup> There may also be other problems with transcription at the DNA level that are less clear. Supplementing testosterone can be beneficial to hypogonadal men in general, by improving the partitioning of nutrients more towards lean tissue and less toward fat tissue, especially visceral fat.<sup>16</sup> Significant data also suggests that appropriate testosterone supplementation can improve blood lipid chemistry to reduce the potential for cardiovascular disease in men who are deficient.<sup>50</sup>

## Testosterone Patches or Creams

We have reports that application of the Testoderm TTS or Androderm testosterone patches directly on the buffalo hump appears to shrink it. If this works, testosterone creams or gels might work better as the dose of testosterone can be much greater than in a patch. While a study of adipocyte (fat cell) chemistry does provide a rationale as to why application through the skin might work, application of a cream would not be likely to work to reduce the belly because of the greater distance from the skin through the stomach muscles to the fat cells inside.

## Anabolic Steroids And Insulin Sensitivity

One study showed that the injectable anabolic steroid nandrolone decanoate (Deca Durabolin) improved glucose disposal and lowered insulin levels when administered at 300 mg per week, while it did not have any effect at 100 mg.<sup>40</sup> While injectable beta esterified steroids like nandrolone may have a beneficial effect on insulin sensitivity, the oral 17-alpha alkylated steroid, oxymetholone (Anadrol-50) has been shown to promote insulin resistance because of its effects on liver metabolism.<sup>44</sup> Other oral steroids, like oxandrolone (Oxandrin) and stanozolol (Winstrol), also can promote insulin resistance.<sup>58</sup> This raises questions about using oral steroids when lipodystrophy is present.

## The Paradoxical Effects of Oral Steroids

However, oral steroids decrease triglycerides (fats) because of their effect of increasing post-heparin hepatic triglyceride lipase, which breaks down triglycerides.<sup>57 59</sup> For this reason oral steroids should help to decrease visceral fat, although they promote insulin resistance, and I have had reports of each of the oral steroids stanozolol, oxymetholone and oxandrolone reducing or eliminating the protease belly in HIV(+) males. Indeed, data from a retrospective study of 700 patients recently released by Dr. Douglas Dieterich gave inferential indication that the use of oral and injectable anabolic steroids may be highly effective in decreasing the potential for lipodystrophy-associated body habitus changes.<sup>60</sup> More study needs to be done to confirm this trend, though.

## Human Growth Hormone (Serostim)

While relative weakness of GH as a muscle-building anabolic hormone is detailed in later sections, GH does appear to have a powerful role in reducing lipodystrophy because of its metabolic effects, including an effect on lipolysis (fat burning), as was asserted by a poster presentation from Dr. Gabriel Torres of New York, that was presented at the XII International Conference on AIDS in Geneva.<sup>56</sup> It should be noted that Dr. Torres said that while five patients had partial of total reduction of fat redistribution on 5 and 6 mg doses of GH, which I assert are overdoses for most people, four of the patients had either elevated glucose, elevated pancreatic enzymes, or carpal tunnel syndrome, so GH at these doses increased the potential for serious health problems. Elevated blood glucose can lead to diabetes and the problems that result including cardiovascular problems, eye damage, and neuropathy; elevated pancreatic enzymes can lead to pancreatitis; and carpal tunnel syndrome is quite painful and may require surgery.

I suggest that if Serostim GH is implemented, it should be considered that Serono's full vial dose is an overdose and this may be why it causes these problems. It is advisable to adjust the dose down for each individual, in an attempt to gain the benefit without increasing the problems. At this time I have reports of a reduction of protease belly and other types of lipodystrophy with doses as low as 1 mg per day and up to 3 mg per day with no side effects. I assert that lower daily doses are safer than higher doses administered every few days, and at a correct dose growth hormone can be an important part of the tools that address the underlying metabolic problem. While growth hormone will have a less powerful effect at a lower dose, at the proper individual dose there will still be a significant effect on fat cell metabolism with significantly less potential for side effects.

## Exercise

Exercise, too, improves insulin sensitivity,<sup>17</sup> so people with insulin resistance should consider some kind of regular exercise, especially weight-training, which also builds lean body mass. Aerobic exercise does not build significant lean body mass. Aerobics may be useful in an effort to reduce lipodystrophy but if a person is losing lean body mass it should be avoided at least until the person has regained any lost weight or stabilized. Aerobics will use energy that the body would normally use for rebuilding lean body mass, only accelerating the loss of lean body mass. If your weight is stable and not in danger of losing weight, to optimally burn fat and reduce lipodystrophy I suggest doing aerobics three times per week on alternate days to weight training days, first thing in the morning on an empty stomach.

## Nutritional Considerations: Carbohydrates

I would also suggest altering your diet so that it is balanced somewhat like what might be called an "evolutionary-type hunter-gatherer diet." This mean getting more protein and a moderate amount of the healthy types of fats, while eating fewer high-calorie, starchy complex carbohydrates or high-glycemic, sugary, simple carbohydrates.

Currently, many progressive nutritionists are recommending that people with insulin resistance consider reducing their total calorie intake and intake of high-calorie complex carbohydrates that can release into the blood stream quickly,<sup>18</sup> including wheat breads and most processed wheat products. These kinds of carbohydrates actually are quite calorie dense and can upset insulin metabolism as much as sweets.<sup>19 20</sup> They are even more problematic when included in high fat foods. (Think pizza and ice cream.) Also on the list of carbohydrates to avoid is the sugar called fructose, which is known to promote insulin resistance, and raise cholesterol.<sup>51</sup> Look for it on ingredient panels as fructose or high-fructose corn syrup. I also underline that some people will experience a reduction in insulin resistance just by reducing the total calories in their diet, as many people simply eat too many calories. *However, if you are having a hard time maintaining weight because of wasting or infection, getting plenty of healthy calories is essential for keeping and building lean body mass, so be careful about reducing your intake of food.*

At the same time, I recommend an increase in the intake of complex carbohydrate sources like vegetables, which are more nutrient dense, and less calorie dense. While some vegetables like potatoes and carrots have high glycemic indexes, they supply good amounts of nutrients per calorie, and they do not contain a great amount of calories for their volume like grains or sweets do, so their effect on insulin production and insulin resistance is not as great. (Carrots contain only 195 calories per pound, boiled potatoes contain 450 calories per pound, while breads contain about 1200 to 1500 calories per pound, and sugar and sweets contain about 1700 calories per pound.) Other good carbohydrate sources are beans, yams and green peas, and whole fruits like oranges, grapes, apples, pears, and cherries. In other words try to eat natural food carbohydrate sources that are one step away from nature. If you do want to include grains in your diet, barley, cream of rye, oatmeal and brown rice have relatively lower glycemic indexes than most wheat products, but be careful to moderate the total amount of these high calorie starch sources. If you include them in your diet, I suggest eating servings that are about one third as much you'd really like to eat. (Again, try to moderate your total carbohydrate calories if your goal is to reduce insulin resistance.)

While a high-carbohydrate diet has been recommended by some nutritionists for conditions of insulin resistance (diabetes), a study by Chen of Stanford University, showed that a lower-fat, higher-carbohydrate diet led to higher day-long blood glucose, insulin, and triglycerides, as well as post-prandial (after a meal) accumulation of triglycerides, and increased VLDLs (very low density lipoproteins),<sup>55</sup> which can increase the risk of cardiovascular disease. The idea that lower carbohydrates diets are superior is supported in an article in Nutrition Reviews by dietitian Nancy Sheard, who said, "*Recent studies indicate that a diet high in monounsaturated fat and low in carbohydrate can produce a more desirable plasma glucose, lipid, and insulin profile.*"<sup>77</sup> A study published in the Journal of the American Medical Association further supported this approach when it showed significantly elevated triglycerides and LDL cholesterol levels with a high carbohydrate diet, while a high-monounsaturated fat diet led to a lower-risk lipid profile.<sup>78</sup>

## Fats

While it is also best to reduce any excessive intake of fats, I don't advocate a very low-fat diet, but a reduction in excess saturated fats, found in animal fat products like butter and lard, and excess omega-6 fats, which are found in common vegetable oils, like corn,



safflower, and sunflower oils. Excess saturated fats and omega-6 fats can promote insulin resistance.<sup>52-68-70</sup> At the same time I recommend a moderate intake of fresh food sources of the essential fatty acid called omega-3, which can reduce insulin resistance,<sup>52</sup> and reduce the potential for atherosclerosis and heart attacks.<sup>65-66</sup> Omega-3 fats are found abundantly in cold water fish like salmon, sardines, tuna, rainbow trout, anchovies, and herring, and in lesser amounts in flax seed oil, some nuts and seeds and beans, like walnuts, pumpkin seeds and soy beans, and in much smaller quantities in dark green leafy vegetables. Consider also including some daily consumption of monounsaturated fats from sources like olive oil. These too reduce the risk of cardiovascular disease. Finally, avoid eating any food that contain artificial fats or processed fats, like hydrogenated or partially hydrogenated oils. Partially hydrogenated oils are found in foods like margarine, french fries, potato chips, shortening, many baked goods, and mayonaise. Harvard researchers have found a very strong link between these types of unhealthy fats and cardiovascular disease.<sup>79</sup>

## Protein

HIV has protein malnutrition as a common theme; a lack of optimal protein contributes to the loss of lean body mass and trouble maintaining it. To reduce the loss of lean body mass and to increase it, I suggest that your diet include extra protein that amounts to at least 1/2 gram per pound of body weight per day. If you lift weights, studies by world-renowned protein scientist Dr. Peter Lemon show that you probably need at least 0.8 grams of protein per pound of body weight per day for optimal increases in lean body mass.<sup>71-72</sup> If you are not allergic to dairy protein, consider eating cottage cheese as a "best" protein for building muscle, as it contains a great amount of the amino acid L-glutamine, which is discussed below. Also consider supplementing your food protein with a protein powder drink two or three times per day. Note that the dairy protein called caseine, seen on labels as calcium caseinate, appears to have the potential to be somewhat more effective for improving lean body mass than other proteins, like whey.<sup>73</sup>

Although I do not agree with some of his more dogmatic concepts, my recommendations for nutrition have some similarities to the "zone" diet outlined in the book *Mastering the Zone*, by Dr. Barry Sears. I have had numerous reports that the use of the zone diet has helped people with HIV reduce cholesterol, the potbelly, triglycerides, and lipodystrophy, in general. (For more discussion on nutrition, see page \*\*\*)

## Dietary Supplements

Supplements that have been shown to improve insulin sensitivity include chromium,<sup>21</sup> and I recommend 200 to 400 micrograms (mcg) of chromium three times per day in the polynicotinate or picolinate form, as one recent (non-HIV) study showed that 1,000 mcg of chromium per day increased insulin sensitivity by about 40 percent without toxicity.<sup>22</sup> The herb silymarin (milk thistle) as a standardized extract in a dose of 200 mg three times per day has been shown to be effective in improving liver function and improving insulin sensitivity.<sup>41</sup> But the *best* supplement for improving insulin sensitivity and glucose disposal may be the antioxidant called alpha lipoic acid (ALA), at 100 to 300 mg three times per day.<sup>23</sup> ALA improves insulin dependent and non-insulin dependent glucose uptake, and it has been shown to effectively lower blood sugar comparable to insulin itself.<sup>24</sup> I believe this is one very important reason ALA is a must for anyone taking HIV medications, especially the protease inhibitors. HIV-nutrition expert Lark Lands, Ph.D., asserts that ALA is a must for people with HIV because of its effect on improving glutathione production and recycling.<sup>25</sup> Studies last year at Stanford University showed that glutathione levels directly correlate with increased survival for people with HIV.<sup>26</sup>

As noted by Canadian protein chemist Chester Myers, Ph.D., N-acetyl cysteine (NAC) can be a valuable addition to the supplements that address lipodystrophy, because of its effect on improving glutathione, which is necessary for glucose tolerance factor metabolism. I suggest 500 to 1,000 mg of NAC three times per day. Also carnitine, as the prescription version called Carnitor, would be beneficial in higher doses, about 500 to 1,000 mg three times per day, as it helps to lowers triglycerides,<sup>27</sup> which are generally elevated when lipodystrophy is present. Also worth considering is the omega-3 dietary supplement called EPA (fish oil), which has been shown to reduce insulin resistance,<sup>52</sup> and lower triglycerides somewhat in a study with HIV(+) men.<sup>28</sup>

And taking a strong multivitamin, multimineral supplement that includes chromium, vitamins A, D, E and calcium and magnesium will help improve insulin sensitivity.<sup>29-33-67</sup> I recommend taking a supplement that contains doses that are much higher than the RDAs, though, as numerous studies have shown that higher nutrient levels are required in HIV disease.<sup>53-54</sup> Finally, high dose biotin supplementation is frequently prescribed by nutritionally-oriented medical doctors to improve glucose metabolism in diabetes.<sup>74-75</sup> High dose biotin also decreases diabetic neuropathy.<sup>76</sup> The dose of biotin that is commonly used is 1,000 mcg three times per day.

## Cardiovascular Disease

As I mentioned in the beginning of this article, we are also beginning to see cardiovascular disease in people on protease inhibitors. When cardiovascular disease is a consideration, we want to make sure that specific preventive nutrients are included. While there are many that can be included for this purpose, to keep it simple I suggest the following: vitamin E at 400 to 800 IU three times per day to reduce the potential for oxidation of blood fats that can contribute to atherosclerosis;<sup>46</sup> vitamin C at 1,000 to 2,000 mg three times per day to assist vitamin E in reducing blood fat oxidation;<sup>47</sup> folic acid at 800 mcg three times per day to reduce the potential for elevated homocysteine, which appears to be another major contributory factor to cardiovascular disease.<sup>43-48</sup> It should also be noted that vitamins B6 at 50 mg three times per day and vitamin B12 at 100 to 500 mcg three times per day help to reduce homocysteine. Of course, all HIV(+) people should consider taking high doses of supplemental B vitamins.

## Glutamine

For any loss of muscle, Judy Shabert, M.D., M.P.H., R.D., asserts that supplementing with high doses of the amino acid L-glutamine, will help reduce the catabolic process of breaking down muscle tissue,<sup>34</sup> and a recent study of wasting HIV patients by Prang showed that this might be true. (See Dr. Shabert's article in the August 1997 issue of POZ magazine.) For frank wasting, HIV(+) people are using between

12 and 36 grams per day of L-glutamine. (One tablespoon is 12 grams.) I have friends who have halted their random diarrhea and improved their lean body mass using these kinds of L-glutamine doses, and in Prang's study wasting and diarrhea and were checked by using 30 to 40 grams of glutamine per day. Glutamine too, has been shown to have a powerful effect on improving glutathione production.<sup>35</sup> (See the dietary supplement section in the chapter on orthomolecular nutrition on page \*\*\*) If you are losing weight I suggest that you supplement your diet with a tablespoon of L-glutamine added to each serving of supplemental protein two or three times per day between meals. If your weight is stable, L-glutamine may be supplemented at lower doses, such as one or more teaspoons per day. (Important note: most dietary supplements only stay in the blood for a few hours, so it is wise to take them several times per day.)

## Metformin

Realize that taking dietary supplements, especially alpha lipoic acid, may help, it is wise to investigate the use of the drugs that are prescribed to improve insulin sensitivity. Ask your doctor about these drugs, which include Metformin.<sup>37</sup> New data presented by Saint-Marc at the 6<sup>th</sup> Retrovirus Conference, in February, 1999 indicates that Metformin may decrease visceral fat while decreasing blood glucose, insulin, and lipid levels.<sup>60</sup> This suggests that Metformin might be somewhat effective in addressing bodyfat redistribution, while also reducing some of the underlying metabolic problems caused by protease inhibitors. Metformin is available with a doctor's prescription at any pharmacy, and if a person has to pay for it themselves, it only costs about \$35 per month. However, cautions about the use of Metformin are warranted. Dr. Michael Dube, of the University of Southern California at Los Angeles says, "Lactic acidosis is a rare side effect of metformin that is more likely to occur when there is some impairment of kidney function. Lactic acidosis, which can be fatal, is also a rare side effect of use of nucleoside analogs. There is no way to know at this time if using the two together might result in more frequent, or more severe lactic acidosis problems. In my opinion anyway, metformin and NRTI's therefore should only be used together with great caution. Also, keep in mind that metformin can lower vitamin B12 levels."

I should also note that I know people who have gotten rid of their potbelly simply by switching from Crixivan to another protease inhibitor. However, while Crixivan may be a promoter of lipodystrophy, it appears that any of the other protease inhibitors can also promote it.

*My special thanks go to Jim Brockman, who was the first researcher in AIDS medicine to hypothesize that insulin resistance was involved in bodyfat redistribution. His guidance sparked my investigation into this important area.*

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## **AIDS-Related Wasting Therapy May Reduce Incidence of Protease Inhibitor-Related Lipodystrophy**

DENVER, Nov 14 (Reuters Health) - New York researchers suspect that HIV-infected patients taking anabolic therapy for AIDS-related wasting, along with antiretroviral therapy, may experience a reduced incidence of lipodystrophy-associated body habitus changes.

Dr. Douglas Dieterich of New York University and colleagues retrospectively reviewed the records of 700 HIV-positive patients, median age 40 years. In that cohort, 73% were Caucasian, and 91% were men. Among the 560 patients receiving antiretroviral therapy, 96% were on one or more protease inhibitors. In addition, 437 of the 700 patients had received anabolic hormone therapy. Two hundred forty-three patients received testosterone, 101 received oxandrolone, 89 received nandrolone and 4 subjects were on growth hormone. Relatively few patients (31 subjects) developed "...physically apparent body habitus changes," according to a meeting abstract. Dr. Dieterich's group noted changes in body habitus in 14 patients on nandrolone, 12 patients on testosterone, 4 patients on oxandrolone, and in 1 patient taking growth hormone.

A report at the AIDS meeting in Geneva this past summer prompted the current investigation. Researchers there reported a 64% incidence of lipodystrophy in a study population, Dr. Dieterich told Reuters Health. "But none of those patients were taking any sort of testosterone replacement, anabolics or growth hormone to help them gain weight." He noted that this was much different than in his practice back in New York, where the lipodystrophy rates were much lower.

The overall implication of the study findings was that "...if you're using aggressive testosterone replacement, in men or women, and you're using anabolics to help patients gain weight, your incidence of lipodystrophy is going to be much lower," Dr. Dieterich said. He cautioned that this treatment is not going to protect against elevated levels of triglycerides and cholesterol. "As a matter of fact, testosterone and the anabolics may actually increase those levels," he said. And use of growth hormone could increase glucose levels, possibly leading to diabetes, according to the New York clinician.

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Nelson Vergel, Houston, phone (713) 520-6630, fax (713) 520-6826, email powertx@aol.com

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