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## HIV infection: Does exercise help?



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Exercise can have important health benefits: increased physical fitness can make the heart and lungs stronger, for example. That is called “cardiopulmonary fitness”. Exercise can also affect body shape, body image and improve people’s wellbeing. Being infected with the “Human Immunodeficiency Virus” (HIV), on the other hand, can have a negative impact in all of those areas – so exercise can be particularly important for people living with HIV.

HIV destroys cells, called CD4 cells, that are an essential part of the body’s defence system against illness. This means that the person’s immunity to disease is gradually weakened. “Antiretroviral” drugs are the treatments used to fight the effects of HIV in the body. But these drugs can have adverse effects, including a condition called lipodystrophy. Lipodystrophy changes people’s body shape because fat is redistributed in their body: for example, their face might become gaunt and they might have extra fat somewhere else, like their belly.

The illnesses that HIV infection can eventually cause include “AIDS wasting”. AIDS stands for “Acquired Immune Deficiency Syndrome” (or “Acquired Immunodeficiency Syndrome”). AIDS wasting is when people lose a lot of weight in combination with diarrhoea and weakness. For many reasons, then, trying to strengthen the immune system, and improve body image and general health is critical to many people affected by HIV.

## **Research has shown that exercising at least three times a week could help**

Researchers from the Cochrane Collaboration looked for trials which tried to find out what benefits and risks might be associated with exercise for adults with HIV. They wanted to know whether people living with HIV benefit from aerobic exercise, progressive resistance training or a combination of both.

Aerobic exercise means any activity that increases the body’s use of oxygen – it makes the heart pump more and activates the cardiovascular system (heart and circulation). Examples of aerobic exercise include walking, jogging, cycling, using a step machine, swimming and rowing.

Progressive resistance exercise is also sometimes called strength training. The aim of these exercises is to build up or maintain muscles by repeating movements that challenge the muscles. These include using weights or elastic bands, doing exercise machine exercises like benchpresses, or using the body’s own weight, as with push-ups.

Altogether the researchers found 19 trials investigating the effect of exercise in people with HIV. More than 900 people took part in the trials, and most of them were men. The researchers looked at different kinds of exercise so there was not enough information to show whether one particular type is better than others. They combined the results of all the individual trials on aerobic exercise, progressive resistance training or combinations of both.

In the trials, the aerobic exercise was done for at least 24 minutes at a time and at least 3 times a week for 4 weeks or more. It included both aerobic exercises without breaks and aerobic exercises that switch between quieter and more strenuous phases, and also involve breaks.

## **Exercise: beneficial for cardiopulmonary fitness**

The results showed that exercising can have several benefits for people with HIV. Programmes with aerobic exercise improved people’s cardiopulmonary fitness: for example, the performance of their lungs. Programmes with progressive resistance training or a combination of both aerobic and resistance exercise had a positive effect in the small number of people with AIDS wasting in the trials: they built up muscle and put on weight. However, more research is needed to be certain of exactly what people can expect from exercising at different stages of HIV.

The trials measured the psychological impact of exercising in different ways. Some trials showed an improvement in quality of life or a reduction in the symptoms of depression among people who were exercising.

Exercise did not seem to cause particular adverse effects in people with HIV. In the trials, there was no major difference in people’s viral loads or their CD4 counts. This means that exercise does not seem to have an impact on the virus itself or on the immunity of adults living with HIV who are medically stable. The trials only lasted a few weeks or months, so we cannot be sure about the long-term effects of regular exercise for people living with

HIV, or the effects at different stages of the disease.

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## Glossary

### Cochrane Collaboration

The Cochrane Collaboration is an international network of thousands of researchers and others. They work together in teams called Cochrane Review Groups to answer questions about health care by doing systematic reviews of evidence. To achieve this, the members of the Collaboration have developed systems and methods for systematically finding and analysing the results of trials of health care interventions. The goal of the Cochrane Collaboration is to help patients, health care practitioners and others make more informed decisions about health care. You can read more about the Cochrane Collaboration at their website.

### infection

In medicine, we speak of an infection when a person has caught a germ (an infectious agent). This germ can be a bacterium, a virus, a fungus or a worm. The germ multiplies and then either spreads throughout the body or only attacks one particular organ. As long as there are no signs of a disease, this is called an asymptomatic infection. When the body shows a reaction to the germ in the form of symptoms, this is called a symptomatic infection (an infectious disease). The period between the moment the germs enter the body and the moment the first symptoms of the disease appear, is called the incubation period. It may last a few hours or days, or even many years. An infection does not necessarily have to lead to the onset of a disease.

### depression

Depression is one of the most common mental illnesses, and it can be mild, moderate or serious. There are several different types of depression that can be recognised by different signs. Which symptoms of depression occur and how strong and frequent they are vary from person to person. People in any social or age group can be affected, both women and men. If someone has had at least two of the following symptoms for longer than two weeks, it might mean that they are depressed: deep sadness; listlessness; loss of interest in the things they usually care about.

### immune system

The immune system is the body's defense system and its task is to protect the body against germs or degenerated cells (like cancer cells). The immune system is very complex and has not been understood in every detail yet.

There are two components: the cellular immune defense (for example "scavenger cells" and "killer cells") and the complement system ("antibodies", for example).

### virus

Viruses are germs that enter living cells (plant, animal or human cells) to multiply. Viruses cause illnesses and diseases such as smallpox, influenza, colds, hepatitis, herpes and AIDS.

## Sources

IQWiG health information is based on research in the international literature. We identify the most scientifically reliable knowledge currently available, particularly so-called “systematic reviews”. These summarise and analyse the results of scientific research on the benefits and harms of treatments and other health care interventions. This helps medical professionals and people who are affected by the medical condition to weigh up the pros and cons. You can read more about systematic reviews and why these can provide the most trustworthy evidence about the state of knowledge here (URL: <http://www.informedhealthonline.org/index.61.en.html>) . The authors of the major systematic reviews on which our information is based are always approached to help us ensure the medical and scientific accuracy of our products.

O'Brien K, Nixon S, Tynan AM, Glazier RH. Aerobic exercise interventions for adults living with HIV/AIDS. *Cochrane Database of Systematic Reviews* 2010, Issue 8. [PubMed summary (URL: <http://www.ncbi.nlm.nih.gov/pubmed/20687068>) ]

O'Brien K, Nixon S, Glazier RH, Tynan AM. Progressive resistive exercise interventions for adults living with HIV/AIDS. *Cochrane Database of Systematic Reviews* 2004, Issue 4. [PubMed summary (URL: <http://www.ncbi.nlm.nih.gov/pubmed/15495092>) ]

O'Brien K, Tynan AM, Nixon S, Glazier RH. Effects of progressive resistive exercise in adults living with HIV/AIDS: systematic review and meta-analysis of randomized trials. *AIDS Care* 2008; 20: 631-653. [PubMed summary (URL: <http://www.ncbi.nlm.nih.gov/pubmed/18576165>) ]

## **The German Institute for Quality and Efficiency in Health Care (IQWiG)**

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

## **Evidence basis of our health information**

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at **[www.informedhealthonline.org](http://www.informedhealthonline.org)**

## **Disclaimer**

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