

A fish before the game? On nutrition, doping and chess

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During one of the Spartakiads, the team championships of the former Soviet Union, the Moscow chess team was served exquisite meals. An official remarked with some emphasis that these meals would make the players feel excellent, which would strongly motivate if not oblige them to perform excellently. 'My wife cooks superb meals at home, and yet I cannot win all my games', was World Champion Vasily Smyslov's sharp reaction.

A dietician once advised grandmaster Boris Gulko to eat carrots. Gulko did not really fancy carrots and passed over the woman's suggestion with the words 'There's not enough green pigment in them'.

The physical condition of people, and therefore also of chess players, is influenced by nutrition – food as well as drink. Remarkably, there has hardly been any research into the influence of nutrition on chess performance. Why should top chess players be interested in nutrition or doping?

A fish

Hardly any top player in the Netherlands pays any special attention to nutrition. The same goes for the Dutch chess federation KNSB.

The team of En Passant from the Dutch town of Bunschoten partake of a fried fish before each home match. This tradition was introduced by player/sponsor Dick de Graaf, as his teammate Richard Vedder relates. There is enough fish for the opposing side and the arbiter as well. 'There is no other philosophy behind this than that it stimulates everyone to arrive on time and relaxes the atmosphere. And it also satisfies our urge to deviate from the norm!'

Grandmaster Erik van den Doel is a vegetarian, for principled reasons. He is a member of the Dutch Partij van de Dieren (i.e. Party for Animals) and an activist: 'Against animal suffering, environmental issues, food cost increases as a consequence of large livestock and the famine caused by this mechanism in the Third World. I have not immersed myself more deeply in the matter of nutrition since Kees Gorter's lecture in Apeldoorn in 1994 (see below). I don't eat sweets before and during the game because of the dip they cause. That's all.'

Groningen's first team members have for several decennia partaken of a banana during every competition game. Former team captain Johan Zwanepol started this ritual in the 1970s. 'My wife thought it was a good idea, as it increases the solidarity within a team. She opted for bananas because eating apples makes too much noise and oranges make your hands sticky. After years the ritual was stopped. It was always a fuss to find a supermarket at away matches.'

Artur Yusupov

In the West we used to watch with Argus' eyes how sportsmen were prepared for top performances in Warsaw Pact countries. Parapsychologists, diets, Spartan training regimes, scientific experiments, doping – everything was possible.

The Soviet anecdotes given at the start of this article were told to the author by grandmaster Artur Yusupov. He grew up in the Soviet Union, became a junior world champion and belonged to the absolute world elite for years. Yusupov says that during his chess career he never witnessed any of these supposed practices. He played chess for fun and he had sporting ambitions. The Soviet authorities, even though they were often paranoid, provided him with many facilities to develop optimally as a top-class chess player.

Yusupov does not rule out the possibility that scientific research into the role of mind sporters' nutrition in relation to top-level performance was done in the Soviet Union. However, he has never witnessed this in practice. And it certainly wasn't a point of attention for top-level players.

With certain exceptions, perhaps. We know that former World Champion Garry Kasparov underlines the importance of being in good physical shape, and possibly he also uses vitamin preparations. Former World Champion Mikhail Botvinnik definitely used extra vitamins. But he lived according to a self-ordained iron discipline and tried anything he considered to be healthy.

Yusupov himself has never given nutrition a prominent role in his top-sport career. You eat, you drink, you breathe. Just like other people.

He does argue that it is unwise to eat a heavy meal right before a game, as this has a sleep-inducing effect. A cup of coffee can have a stimulating effect for a short while, he thinks. In time trouble, or when assessing a critical variation which causes headaches, it can be a welcome stimulus for a player.

Furthermore, Yusupov thinks that it is useful to drink a sufficient amount of water during a game. In his opinion this has a calming effect, although he professes not to know how these things work. Also, it makes you more alert.

About the use of alcohol Yusupov says that generally this is at the expense of concentration and, consequently, of performance. However, if a player is tense during a tournament, a glass of red wine before sleeping can have a soothing effect, he thinks.

In Switzerland he once had a positive experience with bananas: 'My team captain gave me one during a game. I don't know if it's suggestion or not, but after eating it I felt much more at ease and I won the game.'

Magnus Carlsen

On the weblog of the current world's number one, 19-year-old grandmaster Magnus Carlsen, it says that physical sport and nutrition are part of his preparation before a tournament. The weblog doesn't give any further details.

Loek van Wely

Six-time Dutch champion grandmaster Loek van Wely does not pay any special attention to nutrition. 'However, it is important that you don't eat too much right before a game. Then you will feel stuffed during the start of the game and you will feel the urge to bulge. While digesting the food, your blood will flow to your stomach instead of to your brains. So this is at the expense of your concentration. You can compare it with running immediately after having eaten. That doesn't work either. You don't feel well. I tend to leave at least two hours between a meal and a game.'

Van Wely does not adhere to any special diet: 'I wouldn't know what such a diet would have to consist of.' As a top-level chess player he has participated in tournaments in at least 50 countries.

‘I’ve never talked about nutrition to anyone anywhere. It simply isn’t an issue.’ He has never heard from other grandmasters if they concern themselves with nutrition.

That is not to say that nutrition doesn’t play a role, Van Wely asserts. ‘But as a sport, chess is very underdeveloped in a number of respects – also in this area, I think.’

From his chess federation he has never received any advice or information. ‘Then again, I myself have never asked for it either. And I’ve never read anything about it.’

During a game Van Wely doesn’t eat. At the most he will grab a sandwich. He almost always abstains from coffee during games. ‘I like soft drinks, with sugars, like a coke, for instance. I get a small boost from that. It is important to take enough liquids and sugars during the game. If you notice that you are starting to relapse, you should have a drink.’

Van Wely underwent an anti-doping test once – in Spain. ‘But that was just a formality. You had to hand in some urine, but it would have been easy to swap bottles. There was no close control.’ Van Wely won three Dutch championships in which anti-doping tests took place: ‘Remarkably, they decided not to check the champion.’

Van Wely doesn’t know whether any effective drugs for chess players exist. ‘You used to hear stories about Russians that took little pills. If you see the energetic impression that Kasparov always made, I used to wonder if that was still humanly possible. And in East Germany all kinds of food supplements and doping were used by sportsmen.’ Van Wely definitely does not rule out the possibility that certain substances are supplied by doctors in certain countries. ‘But perhaps these pills only have a placebo effect. As long as the suggestion works. Of course, psychology plays an important role in chess.’

Van Wely does not smoke and is a very moderate alcohol drinker. He likes being in good physical shape. That’s why he practices various physical sports besides chess, like fitness and soccer. Top-level chess requires a lot of energy and optimum concentration. ‘During the Corus tournament it’s really one big sprint race, right until the end. You cannot slow down for one moment. Each mistake is lethal. Missing even a single nuance will keep you trailing for the entire game. You’re in for a rough ride. You’re never going to win such a game.’

The ability to perform optimally in a sport depends on many factors, says Van Wely. ‘For one player the solution is opening preparation, another also focuses on his physical shape. Good sleep is important. And there are many more things.’ The question, according to Van Wely, is how much time and energy you spend on each of these factors. ‘I’m no expert on nutrition. You take a few things into account, but that’s about it. I would find it useful to have a few guidelines, so that I know which factors I should pay attention to.’

Sipke Ernst

During a Dutch championship in 2002, professional chess player Sipke Ernst was one of the first six Dutch players to be tested on doping. He was an international master at the time – he is a grandmaster since 2005. ‘Within seven weeks they would send me the result, but I’ve never heard about it anymore. So I suppose it was OK.’ Ernst had to produce 70 milliliters of urine under supervision. ‘That took a while. You do feel a little tense in such a situation.’ At the 2003 Dutch championship it was his turn again: ‘This time I finished more quickly.’

For Ernst the anti-doping test isn’t a problem. ‘It’s a financial issue. By carrying out the anti-doping test the chess federation can obtain subsidies, which is good for chess. So I can understand that they do it.’

Ernst thinks that doping is hardly or never used in chess. ‘In the Netherlands there is one IM who uses hallucinogenic drugs, but I don’t believe for a moment that they work.’

He doubts whether, for instance, beta-blockers are useful. ‘Perhaps they make you feel too much at ease. You have to have a certain tension if you want to be able to concentrate well. Otherwise you get a kind of Naumann-effect. Naumann is a German grandmaster who became a father – he was happy, and didn’t care about winning or losing anymore. His concentration during games declined and this cost him 70 rating points in no time. By the way, when Jeroen Piket became a father, he fell from place seven on the world ranking list to a place outside the top-100.’

Ernst pays conscious attention to his eating pattern. ‘But the main reason for this is that I just want to be fit. I drink maximally five cups of coffee a day, and before a game I don’t drink a lot of it. I don’t think it’s good to sit at the board in a hyperactive state.’

In the Germany Bundesliga, Ernst plays for the Solingen team. One hour before the game, the members of this team have lunch together. Several of the players eat a heavy hot meal. Ernst himself prefers salads. ‘If you eat large amounts, your body has to digest them. You are less sharp in that case. Three hours later, when you have digested your food, your game may be lost already.’

Nutrition is certainly not a subject of conversation among top-level chess players, Ernst says. In 2002 he played for the Netherlands at the Olympiad, and later he did so at a European championship for national teams. ‘From the coaches I never heard anything about nutrition. I rather think this is because it’s not so mega-important.’

‘Chess is not a one-hundred meter sprint race’ – this is how Ernst explains his in perspective relativization. ‘You have to have a reasonable concentration level for five to six hours. But it does not have to be super. That would not be possible, for then you would have a splitting headache after each game. Total concentration is only necessary during the calculation of critical variations in a position’, Ernst claims. ‘With analyses of a more positional nature, what counts more is an objective assessment of positions.’

Jan Timman

Grandmaster Jan Timman belonged to the absolute world elite for years. During important matches, such as the battles for the world championship, a strict daily routine is necessary, he says. ‘Also with regard to what you eat.’ What counts for him is regularity and moderate eating. He points to the fact that in southern countries like Spain it is customary to have a hot lunch around noon. Digesting food costs energy and this is at the expense of your concentration, he says. ‘I myself am not sure as to what is the best thing to eat.’

Timman has had contact with a dietician about healthy eating habits: ‘I stick to her advice, at least it gives you a good and healthy basis. I have never looked more deeply into the subject.’ Timman observes that eating habits rather differ among grandmasters. ‘Some of them, like Andersson and Sokolov, eat little before a game. Others, like Fischer and Kasparov, used to have a copious meal before an afternoon game. That was the reason why Kasparov always wanted to start as late in the afternoon as possible.’

Timman has doubts about the claim that food supplements were not used in the Soviet Union. ‘I have heard rumours that the absolute top players, i.e. Karpov and Kasparov, did receive counselling in the area of food. They were the absolute world top and received a lot of support – more than other top grandmasters. There was talk about astronaut food which they were alleged to have used during matches. This would provide energy, but it would not burden the digestive system, as a result of which the blood can optimally transport oxygen to the brain.’

Timman’s refusal

In an article in the Dutch newspaper Trouw (2002), grandmaster Jan Timman explained his refusal to participate in anti-doping tests. He calls them humiliating and ridiculous where mind sports are concerned.

Timman says that top chess players do not use doping. He refers to an experiment in the 1970s. 'A German doctor who was also a good chess player, Helmut Pflieger, played a game against Boris Spassky under the influence of a beta-blocker. True, he would have lost anyway, but this time he did not even get the slightest chance, and he was so meek. So that substance had a negative effect.'

Also, an experiment in the former GDR, where two groups played chess against each other, is supposed to have ended negatively for the group that had used a substance of which the name has never been made known.

In the interview, Timman says that the doping authorities should have put caffeine and nicotine on the list if they had wanted to be consistent. The Dutch top player concludes that the doping authorities don't do anything about them because these stimulants are universally accepted.

Friso Nijboer

Grandmaster Friso Nijboer recalls that in the 2002 Bled tournament there was an anti-doping test where there was also a check on caffeine. Caffeine was still on the doping list in those days.

'Therefore I drank only two cups of coffee a day. Once I took three.' According to Nijboer there is not a single substance that improves chess performance. 'I've heard this from an international master who calls himself an expert in this area. He has used everything there is to use, and his conclusion is: nothing helps.'

Marihuana Bosboom

In 2003, IM Manuel Bosboom experimented with (vaporized) marihuana during the Apeldoorn blitz championship. He won the tournament before Merijn van Delft (who had been out on the town the night before) and grandmasters Igor Glek and Artur Yusupov.

'It brings you into a lucid state. You start to play more by feel', the chess player reported to a journalist from the local paper. 'It gives you the same feeling that you have when you're in terrific shape. Perhaps my moving gets a little slower, but my next moves come up in my head in a continuous flow.'

Lecture by Gorter

Kees Gorter, a general practitioner in Apeldoorn, gave a lecture on chess and nutrition in 1994 during the so-called 'Creative Tournament' in Apeldoorn. The title of this lecture was: 'What is the influence of physical shape and nutrition on attention and concentration? – On the medical aspects of chess.'

Gorter cites former World Champion Botwinnik, who is quoted in Munzert's *Schachpsychologie* asserting that chess has four aspects: technique, physique, psychology and coincidence. Gorter also refers to Kasparov, who uses the notion of 'compensation sport'. For example, soccer and badminton demand a lot of stamina, attentiveness and quickness of reaction. As the physical and psychological constitutions are closely related, such physical sports are useful for the performance ability of mind sportsmen.

Before his lecture, Gorter had contacted Dr. Harm Kuipers (former ice-skating World Champion and Professor of Exertion Physiology at the Maastricht University), who underlines the importance of the neuro-vegetative system for the stress balance.

In his lecture, Gorter gives several pieces of concrete advice:

- No heavy physical exertion shortly before the game.

- Between games: short exertion in order to stimulate the alertness of the body, but prevent fatigue.
- Bad sleeping before a game is not a problem, since the neuro-vegetative system is hyperactive in that case.

According to Kuipers, physical work does not result in a significant decline of the blood sugar level in the brain. (Recent research questions this conclusion, KvD.)

Some pieces of advice:

- Too much sugar sets the gastrointestinal system to work, which results in a feeling of numbness. Too little sugar leads to shakiness and loss of concentration. Therefore, eat easily digestible meals and no fatty sweets during the game. And: one hour and a half before the game, take calories in the form of, especially, carbohydrates (55-60 percent of the nutrition – carbohydrates can be found in rice, brown bread and fresh fruit, and are quickly and effectively converted into energy).
- Caffeine: a limited amount of coffee or coke drinks stimulates the neuro-vegetative system. This causes an increase in alertness, allowing a person to react more adequately.
- Alcohol has a negative effect on alertness, even in small amounts. Don't drink for minimally twelve hours before a game.
- Other drinks: preferably isotonic.

Gorter also cites Wim Saris, Professor of Human Nutrition at the Maastricht University, who claims that proteins and vitamins are never a problem in the nutrition of top-level sportsmen. Especially varied and balanced nutrition is essential for physical as well as mental performance. Advice needs to be geared to the person.

Gorter also spoke about various psychological aspects of concentration, which are outside the scope of this essay. He concludes with three golden rules (source: 'The menu of the sportsman', an article on school athletics by Dutch Athletics Union KNAU):

- Make your menu sufficiently varied.
- Eat your food as fresh as possible.
- Take sufficient liquids.

Sports physician Zuur

The Dutch chess federation does not have any expertise on nutrition. But the Dutch bridge federation does. Since several years it has engaged sports physician Ciska Zuur for a few hours per week.

She is a recreational bridge player, and she applied for a job at the federation as a volunteer. 'I read that players were going to the U.S. for a 100.000 dollar tournament, and that a few days before the tournament they decided to take a day-long walk through the Grand Canyon. It was steaming hot there. As if this would not have repercussions on your physical condition for days.'

There is hardly any specific knowledge about nutrition for mind sports, Zuur says.

General knowledge about sport and nutrition, with extensive food diagrams, can, among others, be found in the standard work 'Voeding en sport' (i.e. 'Nutrition and sport') by Anja van Geel and Joris Hermans, which was published under the auspices of the Dutch umbrella organization NOC*NSF.

Sports physician Zuur's task is to prepare bridge players for an optimum thinking performance, according to the principle 'a healthy mind in a healthy body'.

Among other things, she gives advice about the preparation for travel abroad, including physical condition, jetlags, differences in temperature, hygiene, and what mind sportsmen can and should not eat if they want to stay fit. 'This is important, but not specifically for mind sportsmen', Zuur says.

It is important for mind sportsmen to stay in good shape. A daily twenty minutes' walk is a sizeable contribution. 'Mind sportsmen often underestimate the amount of energy that their sport requires.' Zuur also watches over the players' general condition. For example, a disturbed blood sugar level or anaemia can cause loss of concentration.

During matches, a player's sitting position is very important. Sitting on the front of the chair and leaning slightly forward on your feet optimally relieves the pressure on your back. However, the problem with bridge players is that a player who leans forward has to watch out that other players cannot see his cards. If a player is seated in the right way (i.e. not slumped or crooked) he will tire less easily, and this will improve his concentration.

'The furniture is not always optimal. In fact, you would wish for an optimal table height which is geared to the person in question, but what will you do if a taller and a shorter player face each other at the table?'

Taking in sufficient liquid is important. Concentration ability declines fast if the body does not contain enough liquid. A liquid loss of two percent already has a negative effect on concentration, but while playing you don't notice this yourself. During air travel it is also useful to drink a lot because the airco causes dehydration and there is low air pressure inside the cabin. Moreover, drinking reduces jetlag effects.

It is also important to take regular walks during a long game or during a bridge tournament. This relaxes the body, which is good for concentration.

Zuur warns against the use of substances that are on the doping list. A player does not necessarily benefit from these substances, but if he gets caught for having used them this will have unpleasant consequences.

The number of substances that may have a positive effect on thinking performance is limited, Zuur thinks.

Some people think that the use of marihuana will relax them. Our sports physician does not know of any research that provides a scientific basis for this assumption. 'It may be true for some people with limited use. But marihuana is forbidden, and it remains in the blood for a long time. I strongly advise against its use.'

Beta-blockers are also forbidden during bridge, except when used on medical prescription, for instance in case of heart problems. They are used by sportsmen in order to relax. The risk of being caught at tests is great. 'Don't do it', Zuur says.

At international events, mind sporters can get into trouble if they use multi-vitamins. These can be contaminated with substances that feature on a doping list of the World Anti-Doping Agency (WADA) and the Dutch Doping Authority. Zuur recommends the exclusive use of officially approved preparations.

Players have to watch out with sleeping pills. These can have a prolonged continued effect and cause numbness on the next day. Moreover, the effect differs per person. If, for instance, you normally never take sleeping pills, the effect will generally be much greater than if you are a regular user. Fortunately, research from Wageningen University proves that a glass of warm milk is actually a much better help to get you to sleep.

If you are still looking for means to give yourself a boost, you can resort to a single cup of strong coffee. Caffeine makes players more alert.

Bananas contain tryptophan, which is converted by the body into serotonin, and this brings about a cheerful disposition. Moreover, bananas contain three varieties of carbohydrates, of which the first gives energy almost immediately, and the other two after half an hour and one hour and a half respectively. As a result, the sugars enter into the blood spread out over a longer period of time. It is

advisable to take bananas that are just ripe, as overripe bananas mainly contain carbohydrates of the first variety.

Alcohol has a negative effect on concentration – even a single glass. Contra-productive during a game are grape sugars and energy drinks. They give a short energy boost, but cause the body to produce too much insulin. This in turn causes the blood sugar to drop to a too low level and, consequently, leads to a decline in concentration.

Another problem are light drinks. These contain too many sweeteners. This causes the body to ‘think’ that it has taken in sugar and, consequently, to produce a superfluous amount of insulin, which also has the effect that the blood sugar level drops and concentration declines.

In any case it is advisable during a tournament to stick as much as possible to fixed food patterns and modes of living, Zuur says.

She observes that recent research shows that after considerable physical strain, and also after a heavy meal, a significant reduction of the blood circulation in the brain is visible. This has been measured with MRI scans. In view of the fact that the difference between top and sub-top players is usually small, such differences can be very important for performance.

With strongly varying temperatures it is useful to pay attention to your food intake. As an example, Zuur mentions a European bridge championship in Pau, in the south of France. Within a few hours one day, the temperature rose from circa 20 to 32 degrees Celsius. Immediately she gave her players advice about food and behaviour, like having an easily digestible meal with salad and abstaining from warm soup. Cold drinks and ice should also be avoided, since they upset the digestive system. Besides, she gave the players advice like not to take street walks in the burning sun.

It is hard to establish the effect of her advice on the players’ match performances. ‘For that you would have to conduct a controlled experiment with a sufficient number of mind sportsmen under different conditions. However, there are all sorts of concrete indications that play a role.’

Zuur bases much of her advice on general medical knowledge and dietetics. At this stage it seems plausible that these also apply to mind sportsmen where their physical condition is concerned.

At the bridge federation many players, trainers and coaches have been counselled by Zuur in recent years. She gave lectures and handouts and sent mailings, and held conversations around personal questions.

Baglione’s research

The Argentinean nutrition researcher Roberto H. Baglione has investigated the dietary habits of 72 grandmasters (17 women and 55 men from 35 countries) by means of questionnaires (2007) and has formulated a number of points of advice about nutrition.

Baglione is head of the Department of Nutrition at the Argentinean National Sport High Performance Centre.

His unique investigation has led him to conclude that top-level chess demands a lot from players – not only mentally, but also physically. Besides technical training, it also requires a more comprehensive programme which includes physical sports and adequate nutrition.

Baglione concludes that two-third of the grandmasters eat at least three meals a day, and that 36 percent of them skip breakfast.

He is especially worried by the skipping of breakfast. This has immediate consequences for the dextrose concentration in the brain and liver. A good breakfast yields nutrients that are essential for the production of neurotransmitters, i.e. chemical messengers that provide the communication between neurons. A good breakfast improves the functioning of the memory and concentration.

Two-third of the investigated grandmasters avoid excessive or hard-to-digest food. After a big meal, Baglione says, the body is busy digesting the food and there is less supply of blood and oxygen to the brain. This leads to sleepiness and fatigue. It is at the expense of concentration and analysing ability.

The researcher found that during games, 96 percent of the grandmasters took solid foods or drinks. Of the solid foods, chocolate scored highly with 80 percent, whereas 15 percent ate fruit. With the drinks the percentages were: water 72 %, coffee 43 %, tea 30 %, and fruit drinks 24 %.

Baglione observes that feeling thirsty is a symptom that comes too late. It is late information about dehydration. Before the player realizes it, a shortage of liquid has already caused a decline in short-term memory capacity, concentration and calculating ability.

The researcher points at negative performance consequences due to insufficient amounts of food in the body. Clothing, air humidity as well as personal characteristics like skin surface, physical condition and age are of influence. This demands advice that is suited to the person in question.

Only two percent of the grandmasters turned out to follow a personal diet by nutrition specialists. One-third of the grandmasters uses food supplements like vitamins, minerals, proteins and amino acids. Baglione observes that a number of these supplements contain substances which are not mentioned on the instructions and are forbidden by WADA (World Anti-Doping Agency), and that wrong usage can also have a contra-productive effect.

Of the grandmasters, 88 percent practices physical training of some kind. 51 percent of them does this on a regular basis (at least three times a week).

Baglione observes that physical activity causes the body to produce endorphines by itself, which have a positive influence on the emotional state and improve resistance. Also, it reduces feelings of fear, depression, tension and stress. Moreover, it improves cognitive functions like memory, creativity, intelligence to a certain extent. Finally, it improves the physical constitution of the body in many aspects.

While the use of tobacco is bad for health and also for appetite, 15 percent of the investigated group are smokers.

The researcher gives a number of concrete points of advice:

- Daily breakfast
- Avoid hard-to-digest food before the game (big meals should be eaten no less than three hours before the game)
- During the game, regularly take sufficient liquid – prevent thirst
- Take moderate amounts of food during the game
- Find out what is the ideal amount of food and drink you need, and stick to this during games
- Dark yellow urine colour indicates dehydration – drinking a lot is the remedy
- Ask a food expert for advice, concentrated on personal characteristics and circumstances
- Use food supplements on medical advice only
- Do physical training and get medical check-ups

In an exchange of emails, Baglione has said that he has not compared his findings concerning eating habits of chess players with the performance (e.g. Elo ratings) of the investigated chess players.

Polish investigation

There is hardly any scientific research about chess and nutrition available. A Polish article has appeared under the title ‘Nutrition habits of young chess players’. The authors write that good nutrition plays an important role in the healthy development of children and also in the health of adults. They claim that adequate nutrition contributes to excellent sport performance.

The investigators have brought into vision the nutrition habits of 75 top-level youth players in Poland from 8 to 19 years old (36 girls, 39 boys). Only 55 percent of them followed the advice to eat four or five meals a day. Three-quarters of them even miss breakfast, especially during match days. Of the youth chess players, 13 percent only ate fruit or vegetables once a day. Sweets are more popular.

The investigators recommend giving information about nutrition to youth chess players, parents, and coaches.

Advice on mind sport and doping

In 2000, at the request of the Dutch Ministry of Health, Welfare and Sport, the Dutch Centre for Doping Questions (NeCeDo) investigated the effects of pharmacological substances on the performance capacity of mind sportsmen. The findings are laid down in the report 'Mind sports and Doping – a tentative investigation of pharmacological substances that can improve performance in mind sports'.

The NeCeDo was the predecessor of the Doping Authority.

The investigation consisted of literature research into the effects of pharmacological substances on mental processes, and an expert meeting (with experts from the sports and science communities). Adequate, specific scientific research into the influence of pharmacological substances on mind sports does not exist. Therefore, the investigators based their research on generally accepted scientific knowledge about the influence of these substances on thinking processes.

Doping leads to false competition, health risks, and image damage for a sport.

In its report, NeCeDo claims that a substance can be considered doping if it leads to performance improvement and presents a health risk at the same time.

NeCeDo advised the mind sports federations in the Netherlands to formally forbid the use of doping and, for this purpose, to put up regulations with sanctions. And this has been done.

The substances that are regarded as doping in mind sports according to the report are: amphetamins, ephedrines, cocaine, beta-blockers and substances that increase the oxygen capacity in the brain. These conclusions apply to chess, draughts, bridge and go.

NeCeDo considers that the mentioned substances can improve performance in mind sports, even though their expected effect is small.

The mentioned substances could have an influence on cognitive functions and processes such as alertness, attentiveness, watchfulness, memory, information processing, thinking speed and the ability to work longer on a task ('cognitive endurance').

Cafeine does not correspond to the definition of doping that is used here. Admittedly, two to three cups of coffee may slightly improve performance, but there are no health risks involved, and higher doses will cause a decline in performance.

Nicotine is also supposed to improve performance, but since its use has become universally accepted, NeCeDo has advised against putting it on the list of forbidden drugs.

The organization advised against adopting the entire international IOC list. However, due to international pressure this did happen in 2004. The Dutch Doping Authority now uses the full WADA list.

Doping Authority

In the Netherlands no chess player has ever been found positive by the Doping Authority. The definition of doping is quite unequivocal: all the substances that are on the list of the World Anti-Doping Agency are regarded as such.

Testing of chess players occurs in the Netherlands since 2002. In 2008, 95 chess players worldwide were tested on doping, says scientific policy worker Olivier de Hon of the Doping Authority. 'One of them was found positive. But I am almost certain that this had to do with either a remedy against asthma or an anti-hypertensive. This must have been someone who had forgotten to ask dispensation for it.'

Earlier, the Dutch Doping Authority drew up a limited list of forbidden drugs (amphetamins, ephedrines, cocaine, beta-blockers and substances that increase the oxygen capacity in the brain). Since 2004 the World Anti-Doping Agency has ordered the Doping Authority to use the full international doping list. This list contains around 200 substances.

On direct relations between mind sports and doping there is no scientific literature, says De Hon. If there is such a thing as doping for chess players at all, this would have to be related to alertness and concentration. You might think of an amphetamin (a pep pill) like ritalin, or modafinil (a remedy against narcolepsy, i.e. sleepiness). These substances are on the doping list. However, performance-improving relations have not been proved.

De Hon mentions two substances that can be regarded as performance-improving for chess players: nicotine and caffeine. 'But they are not on the list of forbidden drugs.' The reasons are that nicotine is universally accepted (and therefore impossible to forbid) and caffeine is said not to be harmful for your health. Moreover, too much caffeine has a contra-productive effect.

'As far as I know, caffeine is not on any doping list at the moment, and it certainly isn't on the WADA/FIDE list', De Hon says. 'That is a fairy-tale. Personally I still think that caffeine does have a stimulating effect on many people's concentration. I should add that obviously, individual differences are always possible.'

De Hon doesn't know about astronaut food. 'But I can imagine what it could be like. It will probably be fast carbohydrates, possibly combined with some proteins. But a dextro energy and a glass of milk will probably have the same effect – at a much cheaper price.'

Any member of the Dutch chess federation KNSB can be subjected to an anti-doping test. In practice, only (sub) top players are tested. This can happen during important tournaments, or after someone has tipped off the Doping Authority.

At the moment, the Doping Authority regards chess as a low-priority sport, which means that it is subjected to the lowest number of possible tests (0-9 per year).

Marihuana is on the list of forbidden drugs. According to the Doping Authority, marihuana does not improve performance, which is why it should be taken from the international doping list. 'It is even contra-productive', De Hon says, 'for it hampers reaction ability and concentration. But it remains on the list because countries like the USA and France think that sportsmen set an example for youngsters, and drug use does not fit into that picture.'

Beta-blockers are on the international doping list in the category where federations can choose for themselves whether they prohibit them or not. This is for the international federations to decide, and since January 1, 2007, WADA has permitted beta-blockers for chess players at the request of the world chess federation FIDE. De Hon does not expect that they will have a performance-improving effect. 'However, the bridge federation does forbid them. Apparently this has to do with their aspirations for bridge to be admitted to the Olympic Games.'

Of some permitted substances De Hon can imagine that they can have a slight performance-improving effect. Red bull, for instance (caffeine), or chocolate ('it contains dozens of active substances, e.g. substances that give energy and make you slightly euphoric'). An advantage of

isotonic drinks is that their liquids reach the cells more quickly. Coffee, on the other hand, expels liquid.

Arthur Schuering

Jurist Arthur Schuering has been a member of FIDE's Medical Commission since 2002, and since 2009 he is the Commission's secretary. In everyday life he is a councillor (judge) at the court of justice in The Hague. For the Dutch chess federation KNSB, Schuering supervises the editing of the doping regulations. These regulations can be found on the website of the chess federation.

As a member, Schuering attends the meetings of the Medical Commission during Olympiads. He also gives comments on propositions to change FIDE doping regulations. He is also a member of the Anti-Doping Tribunal. In this capacity he heard the cases of Press (Papua New Guinea) and Miller (Bermuda) in Calvia in 2004, and in 2009 he heard the Ivanchuk case (Ukraine) in Wijk aan Zee. 'All three of these cases consisted of refusals to take part in an anti-doping test. In the first two cases a warning was issued and the points the players had scored were declared invalid. The normal sanction after a conviction consists of a two-year exclusion from official national and international events. The Ivanchuk case was from The Dresden Olympiad. No sentence was pronounced here, because the doping official was not present on the final day of that event.'

KNSB is obliged to lend its cooperation to anti-doping tests in order to keep NOC*NSF subsidies, says Schuering. 'KNSB does not have an anti-doping policy, but a subsidy-keeping policy. For the world chess federation FIDE, adherence to WADA's anti-doping policy is necessary in order to maintain good contacts with the IOC. These contacts are very important for many chess federations. KNSB is affiliated to NOC*NSF, but many national chess federations are not affiliated to their national Olympic Committees, and therefore do not benefit from subsidies. For these national chess federations, the contacts between FIDE and IOC are a support for the recognition of chess as a sport in those countries, and a means to find affiliation with their Olympic Committee.'

Schuering does not know any examples of chess players that have been found positive. 'I have heard that about five years ago in Italy, a patient suffering from epilepsy was found positive on the use of a certain medicine. I think he was suspended. I don't know any details, and I don't know any other examples.'

According to Schuering, doping does not exist in chess. 'I consider doping to be a substance or method that has a positive effect on chess performance on balance. If such a substance or method existed, chess players, being self-willed as they are, would be using them on a grand scale. And if it were used on a grand scale, there would be rumours about it. And no such rumours have ever reached me. That's why I think that doping does not exist in chess.'

An ordinary club player is not tested, Schuering says. 'In the Netherlands, only top-level players can be tested. If someone has to take, on medical prescription, a medicine which is on the doping list, and if that someone wants to participate in a top-level event, he has to apply for an exemption beforehand. This apply falls under medical professional secrecy.'

'Chess-playing youths in the Netherlands are not tested, but this does happen in other sports. It can do no harm to inform young top players about doping', Schuering says. He doesn't exclude the possibility that delegations of Dutch youth players will get anti-doping tests at international championships in the future. 'That is permitted.'

The secretary of the FIDE Medical Commission does not have any knowledge of nutrition. 'I do not know if FIDE has given any thought to this', Schuering says. 'And I do not know of any chess federations paying attention to nutrition either. I have never heard about astronaut food for top-level chess players.'

The chess community will not be freed from anti-doping tests for some time to come, Schuering concludes. Ten percent of tests must take place 'out of competition', i.e. players are tested when they are not participating in an event. For instance, FIDE has had seconds tested during a world championship match. This was a practical solution in order to fulfil WADA requirements. 'But it is also possible that chess players will have to cooperate by supplying "where about" data in the near future. This means that they are obliged to constantly report where they can be reached by doping officials. This implies a heavy intrusion on their privacy. That worries me tremendously.'

KNSB

The Dutch chess federation KNSB does not have any expertise in medicine or nutrition. Talents' coach Thomas Willemze has put this theme on his action list. Such knowledge would fit perfectly into the new trainer course that is about to be developed, he thinks.

KNSB supposes that there is no doping for chess players. Jeroen Bosch, who is in charge of top-level sport, is more worried about electronic malversation during games.

The federation does have an anti-doping policy, but that is because it is affiliated to the world chess federation FIDE. The latter has an agreement with the World Anti-Doping Agency. The Dutch umbrella organization/subsidizer NOC*NSF has an agreement with WADA.

The key question

So, what about having a fried fish before the game?

The fat fish served at En Passant in the town of Bunschoten is good for the brain, Olivier de Hon says. 'The omega-3 and omega-6 fatty acids in fish are essential materials for the nervous system, and a sufficient intake of these fatty acids is especially recommended for young children (who are building up their nervous system on a daily basis) and elderly people (whose brain slowly deteriorates).'

'Eating a fish is no problem in itself, but eating a very big one is. It is best to poach it or fry it in well-heated olive oil', says Ciska Zuur. 'Only no fat fish, because that is more difficult to digest.'

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