

## Monitoring and prevention of over-training



At some point during the athletic career of a top-archer, you will experience fatigue—either for a few days or, possibly, for several months. Fatigue in otherwise healthy athletes is typically the result of emotional, psychological, or physical overload, or a combination of all three.

Top-archers (even though one may think they do not physically train as hard or intensive as other athletes) train hard and are particularly vulnerable to overload. Too much training especially combined with the high mental loads they experience and often with incomplete recovery can create an over-reached or even over-trained athlete.

The term **over-reaching** is used by exercise scientists to describe the short-term overload, of which the recovery process may take a few days. And although over-reaching can be functional at times (in a process called super-compensation), sustained over-reaching can develop into **over-training**, which is a very serious condition from which it is hard to recover from.

Both over-reaching and over-training can be controlled by recognizing the early symptoms. Different tests exist that measure different parameters, from blood biomarkers, physiological measurements, and advanced questionnaires. Examples of such advanced questionnaires are the “Profile of Mood States” (POMS) or the Recovery Stress Questionnaire for Athletes (RESTQ-sport). But even though a questionnaire like POMS (or RESTQ-sport) is less invasive than using blood tests, or physiological measurements, it is still very unlikely to be seriously used in archery (even on the highest level) since it simply is too much work to fill in for the archer, and too much work to analyse the results for the coach.

Artemis Coached has a very simple, yet efficient **training-scan** built-in; the Kuipers<sup>1</sup> question list. This list consists of a set of 13 yes/no type of questions:

1. Are you feeling tired more easily over the last few days?
2. Do you feel you're not fully recovered?
3. Do you presently perform at a lower level?
4. Does training cost you more effort than usual?
5. Would you rather prefer to skip this practise session?
6. Do you have increased muscle stiffness or muscle soreness?
7. Are you irritated / annoyed more easily?
8. Do you find it difficult to go to sleep?

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<sup>1</sup> See “*Kuipers, H. (2006). Optimalisering van training., Baarn: De Vriesenborch*”



9. Has your appetite decreased?
10. Is your practice / training too monotonous?
11. Is your motivation decreased?
12. Do you enjoy archery less?
13. Do you often don't feel like practising / training?

These questions need to be asked in a regular interval. The interval in fact is configurable in ArtemisCoached, but the advice is to ask them every 14 days. Research suggests that Kuipers' question-list can be a good indicator for over-reaching and over-training.

The questions themselves do not directly indicate whether the archer is over-reaching or over-training, but the number of positive responses (the number of yes') may indicate a trend. The archer or coach can monitor and react to this trend.

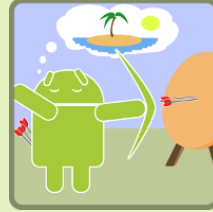
To make it even easier for the archer to quickly answer these questions, they have been expressed in 13 pictograms. The 13 questions and their pictograms are;

	1. Are you feeling tired more easily over the last few days?		2. Do you feel you're not fully recovered?
	3. Do you presently perform at a lower level?		4. Does training cost you more effort than usual?
	5. Would you rather prefer to skip this practise session?		6. Do you have increased muscle stiffness or muscle soreness?
	7. Are you irritated / annoyed more easily?		8. Do you find it difficult to go to sleep?





9. Has your appetite decreased?



10. Is your practice / training too monotonous?



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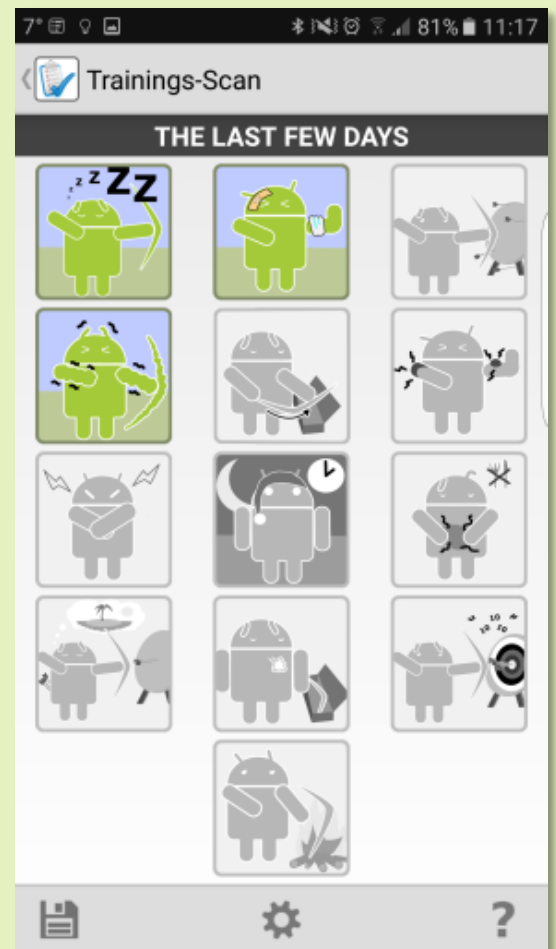
The training-scan can be enabled in ArtemisCoach Options menu (ISA options). When enabled, at each start/use of Artemis (depending on the interval) the archer is presented with the screen on the right. The 13 questions are indicated with the 13 icons. All greyed out indicates all answers are by default “no”.

A swipe left or right on the tile itself, reveals the text of each question.

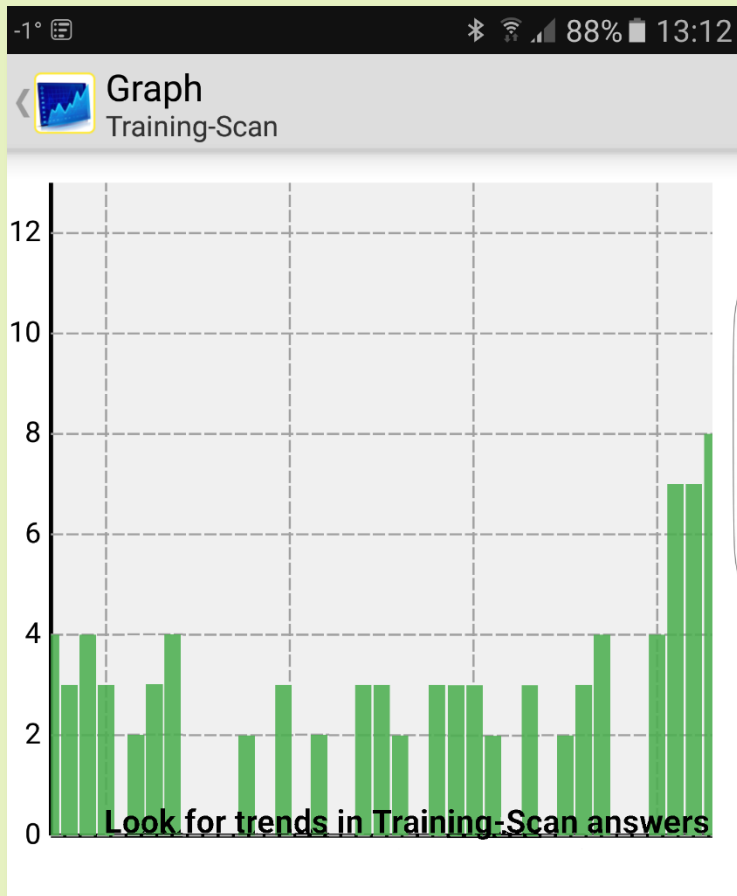
A click on the tile selects or deselects it. A selected (highlighted) tile means; “yes”.

In the screenshot on the right, this archer indicates that he is feeling more tired the last few days, not fully recovered and training costs him more effort than usual.

After a few months, the archer or coach is able to look for trends in the analysis/graph section of ArtemisCoached.



In the screenshot below is such a graph shown. In this example, the archer has answered “yes” quite often; between 2 and 4 questions have been answered with “yes” on average. This should



be considered the norm for this individual. This norm may differ from archer to archer. The last couple of times however, this archers’ number of positive (yes) answers increases.

Is this a sign of over-reaching or over-training? The app doesn’t know, the developer of the app doesn’t know, and the archers coach doesn’t know either!

But any good coach would use these signs to allocate extra one-on-one time with this archer; sit down and discuss intensity of training-schedule, personal situation, and general well-being.

Early recognizing and preventing over-training is by far better than trying to recover from it!

