

## **Evaluation of *Jongeren op Gezond Gewicht (JOGG)*: effect in context**

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### The PVC pipe

Before the introduction of smartphones, tablets and X-Boxes, children played outside with self-made toys. Old PVC pipes were turned into blowpipes to fire darts made from torn up newspaper. Before you think that this is just another complaint about how "it was all better in the old days", we would like to reassure you. The PVC pipe is only mentioned in passing - but we will come to that. Although the decline in outdoor play may well play a role in the growing number of overweight children over the last few decades, being overweight is the result of many different behavioral factors, which also affect one another. It is therefore a good thing that there are various strategies to encourage children to make healthy choices. A prevention program run by one municipality in the Netherlands will not necessarily produce the same results as another. Many policy-makers, researchers and practitioners, however, still think in terms of the traditional PVC pipe metaphor. This metaphor assumes that evidence from controlled (i.e. laboratory) research can be blown down a long pipe and will ultimately be turned into an effective approach to overweight which, provided it is properly implemented, will automatically have the desired effect. It is time to stop thinking in terms of these sorts of traditional concepts and assumptions. Although we know from research how difficult it is to break with tradition, we would still like to help initiate this process of renewal.

### Context as a complex adaptive system

We need to take our leave of the habit of conducting evaluations based purely on the question of whether or not an obesity prevention program has been effective. It is not the programs themselves which are effective, but the tools and resources they offer that are intended to make the system as

effective as possible. And the degree and manner in which this happens will differ from one context to another. In one context this will be quicker than in another, and a program in one context will lead to different results (or outcome clusters) than another. Evaluation protocols which fail to take into account these principles of *complex adaptive systems* are not only unsuitable but also dangerous, because this can lead to wrong conclusions. Thinking in terms of systems, rather than pipes, acknowledges that those involved in a system work adaptively and responsively on the basis of feedback and change. Reacting to small shifts in the environment for a long time may not lead to change, but eventually they may come together to bring about major changes in behavior. There may be long periods, therefore, in which nothing happens in terms of results, followed by periods in which a great deal happens. Ignoring such non-linear processes by only looking at the end of the pipe (i.e. incidence, prevalence), can stifle good and carefully designed implementation processes before they are even established. Interventions will then be incorrectly labelled (i.e. too soon) as ineffective. In addition, it will then not be clear whether the intervention was not effective for anyone or in any context, and what processes should be set up differently next time.

### Jongeren Op Gezond Gewicht (JOGG)

This article will not be concerned with the question of why policy-makers (along with researchers, health promoters, carpenters and almost everyone else, for that matter) prefer to stick to traditional ways of thinking, but will argue why the paradigm for the evaluation of obesity prevention needs to change. To demonstrate this we will apply it to JOGG (*Jongeren op Gezond Gewicht*). Under the umbrella of the municipality JOGG supports parties in neighborhoods working together to focus on eating, sport and exercise. JOGG further helps with the creation of a healthy environment in places where children and young people are often found, such as school, sport and work.

In essence the JOGG approach is what may be referred to as a 'Complex Community Initiative' (1 Connell et al., 1995; 2 Van Koperen et al., 2013). Such complex initiatives aim to bring about change in (at least) the following areas (3 Barnes et al., 2003):

- individuals (e.g. change in lifestyle to prevent excessive weight gain);
- populations (e.g. reduced incidence of overweight children in a city);
- communities (e.g. greater social cohesion in a neighborhood);
- services (e.g. better guidance of children at high risk of weight gain requiring care)
- systems (the processes by which the parties concerned work together, setting common goals, providing services and setting up organization structures).

Under this approach 'interventions' are viewed as new elements which must be fitted into an existing adaptive system. The metaphor of the PVC pipe therefore becomes completely redundant here. The term 'complex interventions' which is often used in the context of obesity therefore does not really apply to the intervention itself (the term 'multicomponent' would perhaps be more appropriate), but more to the context in which it is used (4 Hawe, 2015). And it is specifically this context which we wish to elevate from its traditional role as a 'background variable' (i.e. confounder) to a 'foreground

variable”(5 Hawe et al., 2009). Not just in the design of an intervention or making it contextually adaptive (which is essentially the integral approach that JOGG tries to engineer), but also in its evaluation.

### JOGG in context

Context encompasses all the conditions under which a program is implemented. It raises such questions as 'who is it for' and 'under what circumstances' programs will operate. For the JOGG evaluation it is important to recognize that the context forms part of the open system in which JOGG operates. In other words, JOGG is part of the system (i.e. it is an 'add in') and not separate from it (i.e. an 'add on'). The context itself is subject to change, possibly as a result of JOGG interventions, which may or may not have been intended with the introduction of a JOGG intervention. The choice, adaptation and implementation method for JOGG activities depends on the local context. But that context will also adapt to the new elements. We see such patterns of feedback and adaptation in complex interventions (4 Hawe, 2015). In this way the 'effectiveness of JOGG' cannot be separated from the context (i.e. the system) that it is a part of.

In system theory terms the results of an approach like JOGG include both the intended and unintended effects of activating various processes. This implies that it is no longer possible to rely on just one measure of effect, for example, a change in the average BMI-z score in a population, in order to judge whether an approach has succeeded or failed (6 Pawson, 2006). We realize, of course, that in practice this is often difficult to explain, certainly if the Municipal Council and Alderman are focused on weight change (7 Van Koperen et al., 2017). When taking a contextual approach however, it is impossible to provide a clearly defined difference between output (intermediate implementation goals) and outcome (changes in weight). Outcome patterns can take many different forms and JOGG therefore should be assessed in the light of a wide spectrum of clusters of results (measures of output and outcome).

Interesting, but difficult for policy-makers and others, is that interventions in complex systems can produce extreme outcomes. The dose-response relationships are not linear: small changes can sometimes have huge effects, and major adaptations sometimes produce no effect. A meta-analysis by Burton (8 2012) shows that the effect sizes of complex interventions, compared with 'simple' interventions aimed at individuals, have "long, heavy tails". What Burton means by this is that very wide variations can be seen in the effects brought about by complex interventions, as you would expect with systematic interventions that are highly context-dependent. The practical implications of this also touch upon the limited value of 'proven effective interventions'. Those involved in health promotion will be inclined to select the outliers, i.e. the interventions responsible for the 'long heavy tails', for a national roll-out. But 'proven effective' may then be no more than 'natural variation' around an average effect size, according to Burton. This phenomenon is also seen in 'simple' interventions, but then there is less likelihood of coincidence having an unfavorable effect.

The effectiveness of complex interventions cannot be seen as separate from the system in which they are implemented. With complex interventions such as JOGG it is therefore such that success in municipality A cannot be assumed to have the same result in municipality B. The challenge that this poses for the evaluation of JOGG is to ensure that it always includes the aspects of complexity

discussed here (i.e. interactions between and among parties, delays, responsiveness, adaptation, feedback loops, outcome clusters) (9 Kok et al., 2012).

### How to do that?

Van Koperen and colleagues (7 2017) stated in a recent article in TSG [Journal of Health Sciences] how important it is to create support for evaluation at the strategic and tactical levels by the municipal management, along with an appropriate budget allocated for this purpose. The authors also indicated that dialogue about the importance and nature of the evaluation needs to be encouraged within the municipality. We hope that articles such as this will help to stimulate and guide such discussions. How can this changing paradigm for the evaluation of obesity prevention be realized? We believe that action-supporting evaluation would fit best with the phase which JOGG is now at. We can assume that, in principle, the integral approach implemented by JOGG is the optimum approach in the context of preventing obesity. The decision to adopt this approach is supported by empirical research, practical knowledge and system theory (10 Van Koperen, 2016). It removes the need to have to constantly stuff this approach into a pipe and see from behind what comes out at the other end. It is all about understanding how system adaptations take place in different contexts, and using that knowledge to optimize the outcomes. Action-supported evaluation is an approach in which the researcher supports system changes while at the same time gathering critical knowledge about that. Evaluation is then no longer an external observation of change strategies, but *becomes* one of the strategies. It is adaptive, participative and supportive. It will be apparent that placing the emphasis on one outcome measure, such as BMI-z, provides insufficient information to support the implementation of JOGG activities in a given context. You do evaluate on the basis of one isolated parameter, but the whole system. To do this, the evaluation has to include quantitative research (e.g. questionnaires, BMI-z measurements) as well as qualitative research (e.g. observations, interviews, network analysis, document analysis). The adaptive nature of the evaluation will enable the investigator to assess during the course of the implementation process what the best results (or outcome clusters) were at a particular stage.

With this type of evaluation it is therefore less likely that the results will be allocated to the specific *form* of certain JOGG activities or operational elements (e.g. distributing water bottles, painting lines on school playgrounds, drawing up a policy on food and nutrition). Instead the focus will be placed on the *function* of the various elements in the JOGG approach. Understanding the function of activities (e.g. awareness, ownership, institutionalization) in the evolution of systems could help to support JOGG activities in different contexts. It is therefore a matter of understanding what intervention functions are required in which contexts. Evaluation should not be used as a means to score intervention elements on the basis of 'efficacy' without a clear understanding of the context. Evaluations are intended to support JOGG municipalities their plans to make their approach more adaptive to the context in which it is being used. Which brings us back to the reintroduction of the good old weapon for firing darts. The metaphor of the PVC pipe in the implementation of obesity prevention therefore needs to take on a new meaning: one which provides room for Context.

## SUMMARY/BOX

- Traditional dose-response patterns cannot be applied to an approach like JOGG. Multiple interacting elements in a system create non-linear relationships.
- Preventing obesity requires a holistic or integral approach. This does not have to be demonstrated over and over again (i.e. Research). What the field needs is insight into how things can be improved (i.e. Evaluation).
- Municipalities should be viewed as complex adaptive systems in which the JOGG approach takes the form of an 'add in' rather than an 'add on'.
- The effectiveness of JOGG activities depends on the local and national context.
- It is impossible, but also unnecessary, to attribute effect to specific JOGG activities.
- Action-supported evaluation is the most suitable method for JOGG.
- It is not possible to provide optimum support by focusing on one isolated parameter. It is necessary to have insight into a cluster of outcomes. This requires evaluation using both quantitative and qualitative research.

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