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SWOV Fact sheet

Rehabilitation courses for road users

Summary

Rehabilitation courses are educational measures directed at deviant driving behaviour of car drivers. The Netherlands has four rehabilitation courses: EMA (Educational Measure Alcohol and traffic), LEMA (Lighter version of EMA), EMG (Educational Measure Behaviour and traffic) and ASP (Alcohol Interlock Programme). Also outside the Netherlands many rehabilitation courses are organized. Participation may be voluntary or can be made compulsory, if necessary in combination with other punitive measures and sometimes linked to a demerit points system. Not all courses are equally effective. The effectiveness of the courses cannot be defined unequivocally. Some evaluations indicate an effect on behaviour, crash rate and recidivism, whereas evaluations of other courses show no effect at all. Various (international) studies indicate that a rehabilitation course is more effective when it is combined with a temporary or permanent licence suspension.

Background and contents

Rehabilitation courses for road users are often referred to as Driver Improvement Programmes in English-speaking regions and in the Netherlands they are called Educational Measures. These courses aim at improving hazardous driving behaviour of offenders, for the purpose of reducing the crash rate. The majority of courses, for instance the Dutch Educational Measure Alcohol and traffic (EMA) focus on drink-driving offences, but other courses aim at different—major or recidivist—offences like speeding or aggressive driving. This fact sheet will discuss when and how rehabilitation courses are presently applied in the Netherlands and will give examples of courses elsewhere in Europe. Furthermore, this fact sheet discusses the effectiveness of rehabilitation courses and how these courses can be improved in terms of process and content.

When and how are rehabilitation courses applied?

As indicated above, rehabilitation courses for road users focus on people who have committed a (major) offence. Many countries make use of some type of rehabilitation courses. Courses aimed at drink driving are for example found in Belgium, Austria, Switzerland and the United Kingdom. Belgium and the United Kingdom also have courses specifically targeted at speeding offences. Germany uses a rehabilitation programme for novice drivers who have committed an offence. The purpose of this course is to prevent recidivism by making participants more aware of the hazards. For a more comprehensive overview of international rehabilitation courses we refer to the review articles that can be found under [Publications and sources](#).

In the Netherlands and in many other European countries the courses are compulsory. If the driver does not or not sufficiently cooperate, the driving licence is suspended. Occasionally, the driving licence is suspended before the offender starts the course and only returned after successful completion. In other countries, such as Belgium and Switzerland, the driver is given an option. If the driver opts for the course, this may result in the matter not being taken to court, or in the consequences being less severe. For instance, drivers may have their driving licence returned more quickly or fines may be lower. Occasionally, the course is combined with a demerit points system and must be followed when a set number of points has been reached (see also SWOV Fact sheet [Demerit Points Systems](#)).

Rehabilitation courses often take up a number of daily periods, divided over a number of days. They are given by trainers/psychologists who are trained for this purpose. Trainers of drink-driving courses often work in addiction care. Police or driving instructors are sometimes involved in courses aimed at speeding. The content of the courses varies, but the majority aim at improving self-reflection, hazard perception and correct perception of one's own driving behaviour. Participants are also frequently presented with theoretical knowledge. In the case of drink-driving courses, the information for instance concerns the effect of alcohol on driving behaviour. Some courses also include a practical part; in Germany, for example, a test drive is made so as to gain feedback from other participants.

Which rehabilitation courses are available in the Netherlands?

In the Netherlands four rehabilitation courses or Educational Measures are available: the Educational Measure Alcohol and traffic (EMA), the Light EMA (LEMA), the Educational Measure Behaviour and traffic (EMG), and, since December 2011, the Alcohol Interlock Programme (ASP). In 2013, the Dutch organisation that is responsible for imposing rehabilitation courses, CBR, imposed 14,000 educational measures to improve fitness to drive or driving skills. The EMA was imposed 5734 times, the LEMA 3370 times, the EMG 1342 times and the ASP was imposed 3886 times. For more information about the Alcohol interlock programme see SWOV Fact sheet [Alcohol interlock programmes](#).

1. The *EMA* (Educational Measure Alcohol and traffic) is a two-day course (one full day and two dayparts) given to people who participated in traffic with a blood alcohol concentration (BAC) between 1.0‰ and 1.3‰ (between 0.8‰ and 1.0‰ for novice drivers). EMA is compulsory: if the offender does not participate (or not actively enough), the driving licence is suspended. In addition, the offender must pay the course fee of 870 euro (CBR pricelist 2015). EMA aims to teach drivers to separate alcohol from traffic participation. During the course, participants get information about the effect of alcohol on the body and on driving performance. An EMA group consists of eight to twelve participants.
2. The *LEMA* (Light Educational Measure Alcohol and traffic) consists of two day parts of 3.5 hours each. LEMA is intended for drivers with a BAC between 0.8‰ and 1.0‰ (between 0.5‰ and 0.8‰ for novice drivers). In the Netherlands, the legal limit for this group of drivers is 0.2‰. The course is compulsory; if refused (or when not participating actively enough), the driving licence is declared invalid. The offender must pay the course fee of 546 euro (CBR pricelist 2015). The idea behind LEMA is that this group, with this particular BAC, can still be pointed into the right direction with a relatively mild measure. A course has eight to twelve, mainly young, participants. They have to pay for the course themselves. The content of LEMA resembles that of EMA, but LEMA is less confrontational and the approach is somewhat more positive. .
3. The *EMG* (Educational Measure Behaviour and traffic) is meant for drivers who repeatedly showed undesirable driving behaviour in the course of one drive. Also in the case of one single major speeding offence, a driver can be referred to EMG. It is important that prior to participation it has been established that the person concerned has indeed committed the offence. EMG can therefore not be imposed merely on the basis of the number plate. Other requirements involve deliberate hazard-inducing driving behaviour, lack of hazard perception, incorrect interaction with other road users, or behaviour offending against traffic laws and road signs. It is compulsory for participants to take this three-day course and they have to pay the course fee of 1038 euro (CBR pricelist 2015). During the course drivers are encouraged to become more aware of the risk their behaviour constitutes for other road users.
4. The *ASP* (Alcohol Interlock Programme) not only encompasses installing an alcohol interlock, but also supervision, guidance and evaluation. CBR can impose ASP on serious alcohol offenders with a BAC from 1.0 and on repeat offenders with a BAC from 0.8‰ upwards. CBR first checks for alcohol dependence when the BAC is higher than 1.8‰. The ASP has a minimum duration of two years. The fee of 1120 euro (CBR pricelist 2015) for the guidance programme has to be paid by the offender. Additional costs are those for rent of the alcohol interlock, installing it, reading the data, and, finally, the removal of the alcohollock. Furthermore there is the cost for the application of an adapted licence with code 103, driving with an alcohol interlock. These costs may total an amount of 2000 euro. Participants who, after two years, still cannot separate alcohol use and driving a vehicle face six months extensions of the programme until they are capable of doing so. At present, discussion is taking place on whether offenders who must participate in the alcohol interlock programme and are also tried under criminal law receive double punishment. More clarity on this issue is expected during the course of 2015.

Since January 2015 the EMA, LEMA, EMG and the guidance programme of the ASP are all given by Trafieq, a company for training and consultancy in the field of alcohol and traffic.

Occasionally, a driver may meet the legal criteria to take a rehabilitation course and nevertheless not be suitable for such an educational measure. The EMA and LEMA have limited use in case of addiction problems, for example. Neither should people with a personality disorder be referred to the

EMG. These are the reasons why the Dutch Driving Test Organization CBR has drawn up counter-indications (see www.cbr.nl).

How effective are rehabilitation courses?

In the Netherlands the EMA, LEMA, EMG and the Alcohol interlock programme have been evaluated. This evaluation looked at the effects on knowledge, attitude and self-reported behavioural intention, but did not look at recidivism (repeated behaviour), or the crash rate. A recidivism study is presently being carried out (see Blom, 2013, for an interim report).

The EMA seems to have a positive effect on knowledge and attitude with respect to drink-driving (Vissers & Van 't Hoff, 1998). This effect is also noticeable with respect to behavioural intention. It should be mentioned that this concerns self-reported behaviour that may be subject to social desirability. Based on international data, Kuiken & Oostlander (2004) estimate that the recidivism rate will be reduced by 10% in the first year and by 5% in the second and third year after having taken the EMA course. However, these estimates are based on only a few studies that show a large effect, whereas various international studies (see, for example, Elvik et al., 2009) show no effect. For this reason, conclusions cannot be drawn about the effect of the EMA on recidivism in the Netherlands. On the other hand, recidivism research was carried out into the effect of a drink-driving course in Belgium (Vanlaar et al., 2003). Although the study does not show a statistically significant effect, the authors conclude that there are indications that the course reduces the percentage of recidivism.

The EMG was evaluated in 2009-2010 (Nägele, Vissers & Reurich, 2010). The study measured the effect of the EMG by looking at both trainers' opinions and participants' answers to a survey. According to the trainers they often succeed in making the participants aware of their unsafe traffic behaviour. The survey study, however, indicated that possible significant differences between before and after study pointed in the opposite direction from the one that was expected. For example, the percentage of participants indicating that they can control their anger, or the percentage rejecting speeding is lower in the after study than in the before study. When considering subgroups, 'the average participant' and the 'young, high-risk participant' in particular are found to benefit from the EMG. The course was found to have weakened their resistance against changing their behaviour. The present approach is less suitable for the very experienced young and older participants. This may be the case because they already have a high score on the before measurement and the course therefore has little to add. The reason, however, may also be attributed to the course paying insufficient attention to their specific problems.

The authors believe that the results that were found may be explained by the participants having given socially desirable answers during the before measurement. A Swedish study evaluating an online course, makes a similar suggestion (Wählberg, 2010): participants reported experiencing more stress, aggression, driving under the influence, and other offences than earlier. However, the levels were lower than those in a control group, which suggests that the lower level in the before test were caused by socially desirable answers. This finds support in the scores on a social desirability scale.

The LEMA has also been evaluated (Tertoolen & Wortman, 2010), but this was mainly a process evaluation among thirteen trainers. This evaluation is not a suitable basis to make statements about the LEMA effectiveness.

The Dutch Research and Documentation Centre (WODC) started a multi-annual recidivism study among participants of the LEMA and the EMG, and in the future also the ASP. An interim report (Blom, 2013) shows that recidivism among LEMA-participants declined, whereas it was not possible to conclude the same for EMG-participants. The authors emphasize that the results present only a first indication of possible behavioural effects. The results of the recidivism study are expected in 2022.

The Directorate-General for Public Works and Water Management (Rijkswaterstaat), in the Netherlands evaluated the alcohol interlock programme (Rijkswaterstaat, 2014). This evaluation could not yet look at recidivism because the interval between introduction of the measure and reporting was too short. However, the feasibility and practical operation of the alcohol interlock programme were investigated. Rijkswaterstaat concludes that the relevant parties work well together to make the program effective in practice. The procedures and communication are satisfactory.

In addition, a number of international surveys and meta-analyses of the effectiveness of rehabilitation courses have been published. For example, Masten & Peck (2004) included 37 studies in their meta-

analysis, involving a total of 106 programmes, investigating the effects of these programmes on offences, crash rate and hazardous behaviour. The analysis showed small, but significant effects on the crash rate. If no distinction is made in terms of type of intervention, the 'average' intervention corresponds with a reduction of the crash rate of 6% and a reduction of offences of 8%¹. If the individual types of measure are considered, those measures combined with temporary or definite suspension of the driving licence turn out to be the most effective (reductions of 17% in crash rate and 21% in offences). This is usually a construction in which the participant has in principle lost his license, but recovers it after having completed the course. The Dutch ASP works the same way, but usually the participant must wait a while before he can participate in the ASP and recover the licence again. This is a different construction than the EMA, LEMA and EMG, in which the driver's license is still valid but can still be suspended if the offender does not or not fully participate in the course. The effectiveness of the courses seems to be determined by the course being combined with the (threat of) actually losing one's licence. Masten & Peck (2004) conclude that group sessions are also effective. These correspond with 5% fewer crashes and 8% fewer offences.

Ker et al. (2005) studied the effectiveness of 18 courses and found no effect on the crash rate. Four of the courses were advanced driver trainings aimed at the average driver, the remaining 14 were aimed at drivers who had v committed traffic offences.

In the context of the European project SUPREME (2007), a large number of courses were studied. They concerned both voluntary education and courses intended as a legal penalty measure. Consequently, the results of this review are very heterogeneous. Five meta-analyses were included, among which the above-mentioned studies of Masten & Peck (2004) and Ker et al. (2005). Struckman-Johnson et al. (1989; cited in the SUPREME study) did not find an effect of the measures studied. Wells-Parker et al. (1995, also cited in the SUPREME study) studied courses focusing on drink-driving offenders. They concluded that the crash rate and recidivism are 7 to 9% lower for those who took a rehabilitation course, compared to those who had only been given 'ordinary' penalties (a fine or suspension of the driving licence, for instance). Finally, Elvik et al. (2009) conclude that group discussions supervised by a group leader have no effect on the crash rate; however, courses in defensive driving behaviour do have an effect.

.The European DRUID project also investigated the effectiveness of rehabilitation courses and reached a similar conclusion: the courses are especially effective when combined with a punitive measure (Boets et al., 2008)

How can effectiveness be improved?

Process

In the ideal case, everyone meeting the criteria for a course will indeed end up in the course without anyone 'escaping'; this is defined as *high sensitivity of the selection process*. At the same time, people who do not meet the criteria do not end up in the course undeservedly. The ideal case is therefore also a case of *high specificity of the selection process*.

With EMA and LEMA, sensitivity and specificity are higher than with EMG. After all, EMA and LEMA are based on a breath test. Matters are more complex with EMG, because many types and combinations of behaviour are possible that may result in 'hazardous or hazard-inducing behaviour'. Consequently, no standard procedure is available, as is the case with drink driving. People who meet EMG criteria may not be referred to the course. In a letter to Dutch Parliament, dated April 2010, the Minister of Transport presented proposals to improve the process of referral (VenW, 2010).

Content

In the previously mentioned SUPREME study, a number of suggestions are presented to improve the effectiveness of rehabilitation courses. For instance, courses should be combined with temporary suspension of the driving licence and a course should be customized to the specific problems of the target group as much as possible. For example, personality disorders should be treated differently from the way addiction problems are dealt with. Mesken (2006) advises the course to be directed at specific behaviour (assessing hazards or interpreting specific events, for instance), instead of training general safety awareness. Furthermore, SUPREME argues in favour of an empathic approach, rather

¹ Since this is a meta-analysis, seriousness of the crash or type of offence were not itemized. One of the criteria for inclusion in the meta-analysis was: "the study has included crashes, as well as offences as independent variables".

than a confrontational approach. This approach is presently already applied by the Dutch LEMA. Finally, the SUPREME study recommends imposing rehabilitation courses as early as possible, in order to prevent deviant behaviour becoming a habit. This means that especially offenders among novice drivers constitute an important target group.

Conclusion

The effectiveness of the courses has not been established unequivocally. A number of evaluations show an effect on attitude, behaviour, crash rate and recidivism, other research, however, shows no effects. Considering the various (international) studies, we can conclude that a rehabilitation course is more effective if it is combined with temporary or definite suspension of the driving licence. Dutch studies into the effects of EMA indicate an effect on knowledge, attitude and behavioural intention, but international evaluations do not present a convincing picture. A recidivism study by WODC seems to indicate a positive effect of the LEMA, whereas for the EMG no effect can be observed. The final results will be published in the concluding evaluation.

Publications and sources

Blom, M. (2013). [Recidivemeting LEMA en EMG 2009. Achtergrondkenmerken en strafrechtelijke recidive van de eerste LEMA- en EMG-deelnemers - tussentijdse rapportage](#) (No. Memorandum 2013-2). Den Haag: Wetenschappelijk Onderzoek- en Documentatiecentrum WODC.

Boets, S., Meesmann, U., Klipp, S., Bukasa, B., Braun, E., Panosch, E., Wenninger, U., Rösner, S., Kraus, L. & Assailly, J. (2008). [State of the Art on Driver Rehabilitation: Literature Analysis & Provider Survey](#). Deliverable 5.1.1. DRUID Driving under the Influence of Drugs, Alcohol and Medicines. Brussels: European Commission.

CBR (2013). [Jaarverslag 2013](#). Stichting Centraal Bureau Rijvaardigheidsbewijzen CBR, Rijswijk.

Elvik, R., Høy, A., Vaa, T. & Sørensen, M. (2009). [The handbook of road safety measures](#). Second Edition. Emerald Group Publishing Ltd, Bingley, UK.

Ker, K., Roberts, I., Collier, T., Renton, F. & Bunn, F. (2005). [Post-licence driver education for the prevention of road traffic crashes: A systematic review of randomised controlled trials](#). In: Accident Analysis and Prevention, vol. 37, nr. 2, p. 305-313.

Kuiken, M.J. & Oostlander, I.L. (2004). [Evaluatie vorderingsprocedure: Eindrapport](#). Directoraat-Generaal Rijkswaterstaat, Adviesdienst Verkeer en Vervoer AVV, Rotterdam.

Masten, S.V. & Peck, R.C. (2004). [Problem driver remediation; A meta-analysis of the driver improvement literature](#). In: Journal of Safety Research, vol. 35, nr. 4, p. 403-425.

Mathijssen, M.P.M. & Houwing, S. (2005). [The prevalence and relative risk of drink and drug driving in the Netherlands: a case-control study in the Tilburg police district : research in the framework of the European research programme IMMORTAL](#). R-2005-9. SWOV Institute for Road Safety Research, Leidschendam.

Mesken, J. (2006). [Determinants and consequences of drivers' emotions](#). Proefschrift Rijksuniversiteit Groningen. SWOV-Dissertatiereeks, Stichting Wetenschappelijk Onderzoek Verkeersveiligheid SWOV, Leidschendam.

Nägele, R.C., Vissers, J.A.M.M. & Reurich, J. (2010). [Evaluatie Educatieve Maatregel Gedrag \[en verkeer\] \(EMG\) : inhoudelijke en procedurele evaluatie. Eindrapport](#). Directoraat-Generaal Rijkswaterstaat, Dienst Verkeer en Scheepvaart DVS, Delft.

Rijkswaterstaat. (2014). [Evaluatie alcoholslotprogramma: Hoofdrapport](#). Delft: Rijkswaterstaat Water, Verkeer en Leefomgeving.

SUPREME (2007). [SUmmary and Publication of Best Practices in Road Safety in the EU-MEmber States plus Switzerland and Norway. Thematic report: Rehabilitation and diagnostics.](#) Directorate-General for Transport and Energy (TREN), European Commission, Brussels.

SWOV (2015). [Alcoholslot.](#) SWOV-Factsheet. SWOV, Leidschendam.

Tertoolen, G., & Wortman, S. (2010). [Evaluatie LEMA.](#) Delft: Rijkswaterstaat Dienst Verkeer en Scheepvaart.

Vanlaar, W., Kluppels, L., Wiseur, A. & Goossens, F. (2003). [Leiden sensibilisatiecursussen voor bestuurders onder invloed van alcohol tot een lager recidivegehalte dan klassieke straffen? Een empirische evaluatie van de Belgische sensibilisatiecursussen op basis van de survival time tot de eerste recidive.](#) Belgisch Instituut voor de Verkeersveiligheid BIVV, Brussel.

VenW (2010). [Toezeggingen doorgifte informatie politie/CBR en termijnen educatieve maatregelen.](#) Brief aan de Tweede Kamer, 6-4-2010, VENW/DGMO-2010/843. Ministerie van Verkeer en Waterstaat, 's-Gravenhage.

Vissers, J.A.M.M. & Hoff, J.P. van 't (1998). [Effecten van de EMA: Een evaluatieonderzoek naar de leereffecten van de Educatieve Maatregel Alcohol en verkeer.](#) TT98-26. Traffic Test, Veenendaal.

Wählberg, A.E. (2010). [Social desirability effects in driver behavior inventories.](#) In: Journal of Safety Research, vol. 41, nr. 2, p. 99-106.

CBR (2009). [Jaarverslag 2009.](#) www.cbr.nl; Dutch Driving Test Organization CBR, Rijswijk.