



Boot Camps

Toolkit technical report

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This report is produced in collaboration with staff from the Campbell Collaboration Secretariat. It is a derivative product, which summarises information from Campbell systematic reviews, and other reviews, to support evidence-informed decision making’.

Abstract/Plain Language summary

The objective of this technical report is to review the evidence on the effect of military-style boot camps for young people on reoffending outcomes.

This technical report is based on two systematic reviews: Meade and Steiner (2010), who focused on juvenile boot camps, and Wilson et al. (2008) which reports results for both adult and youth boot camps. A narrative review of the effects of boot camps on recidivism is also used to inform this technical report (Riphagen, 2010).

Boot camp programmes are an alternative sentencing option originally adopted to reduce prison populations but still maintaining a punitive approach to offending. Boot camp programmes have a particular emphasis on military-style discipline and rigorous physical activity (Riphagen, 2010). Common activities include physical exercise, and military drills and ceremonies. Some boot camps also incorporated other rehabilitative programmes such as drug or alcohol treatment, vocational education training and aftercare transition assistance (Wilson et al., 2008).

The theory of change that underpins military-style boot camp programmes is that “the short-term confinement, coupled with the strict discipline and demanding physical exercise and labour common to boot camps, can “shock” participants into behaving in a respectful and obedient manner, making them more likely to comply with rules or laws upon completion of the programme” (Meade & Steiner, 2010, p. 842). In addition, routine, discipline, and interaction with programme staff may teach participants self-control, respect, and other prosocial behaviours.

Overall, bootcamps were not effective in reducing youth crime and violence. The observed effect size for mixed violent and non-violent reoffending of -0.07 corresponds to an approximate increase in reoffending, and the evidence rating is 4.

Qualitative data show that youth liked the physical activity aspect of the programmes and also took pride in their appearance and cleanliness. They took less well to discipline. The main

implementation issues were the sites being in locations far from the offender's home, and lack of adequate aftercare to ensure community reintegration (Farrington et al., 2002; KPMG, 2014).

Boot camps are more expensive than the cost of regular detention centres, but their duration may be shorter (on average 90 – 180 days), and they could be more cost-effective if there was a desirable effect. The Thorn Cross High Intensity Training programme in a YOI in the North of England was shown to be cost-effective on this basis, but the Colchester Military Corrective Training Centre in the South was not, as it was more expensive and had little effect on recidivism.

If boot camps are to be trialled again in the UK, then designs should consider including a focus on physical activity rather than discipline, a focus on personal and room cleanliness inspections, and staff responsible for these activities who have a separate identity from regular prison staff in these programmes. In addition, rehabilitative and therapeutic components should be included in programmes, there should be adequate discharge planning, and there should be connections to local sports and fitness facilities.

Objective and approach

The objective of this technical report is to review the evidence on the effect of military-style boot camps for young offenders on reoffending outcomes.

This technical report is based on two systematic reviews: Meade and Steiner (2010), who focused on juvenile boot camps, and Wilson et al. (2008) which reports results for both adult and youth boot camps. A narrative review of the effects of boot camps on recidivism is also used to inform this technical report (Riphagen, 2010).

The following inclusion and exclusion criteria were used to inform the selection of systematic reviews.

Inclusion criteria

To be included in this report, a systematic review must include evaluations of the effects of military-style boot camps that employed a control group (e.g., an alternative treatment control such as probation or incarceration) on reoffending rates. Reviews must discuss the effects of boot camps on young people independently of the effects on adult offenders.

Exclusion criteria

Reviews were excluded if they did not include evaluations of boot camp programmes for young people. If adult offenders were included, a review was excluded if results were not presented independently for juvenile offender programmes.

Outcomes

Wilson et al. (2008) reported the effects of boot camps on reoffending, across several domains, including general recidivism (i.e., including all types of offences, but excluding ‘technical violations’ such as parole violations), arrest only, conviction only, and re-institutionalisation only. The other two reviews, by Meade and Steiner (2010) and Riphagen (2010), discuss the effects of boot camps on outcomes such as recidivism but neither performed a meta-analysis. No reviews reported the effect on violence as an outcome, although Wilson et al. (2008) reported studies of non-violent and all crimes separately (i.e. the latter including both violent and non-violent offences).

Description of interventions

Boot camp programmes were designed originally for adult offenders, as alternative sentencing options to reduce prison populations but still maintain a punitive approach to offending (Riphagen, 2010). Later, boot camp programmes for juveniles were conceptualised and modelled on adult boot camps with particular emphasis on military-style discipline and rigorous physical activity (Riphagen, 2010).

Youth who attend boot camps are expected to participate in a variety of activities, all of which are “carried out in the context of strict discipline” (Wilson et al., 2008, p. 17). Common activities include physical exercise, and military drills and ceremonies. In comparison to boot

camp programmes for adults, programmes for young people are less focussed on military drilling and are required to provide academic education (Wilson et al., 2008).

Some boot camps also incorporated other rehabilitative programmes, such as drug or alcohol treatment, vocational education training and aftercare transition assistance (Wilson et al., 2008). A survey of eight youth boot camps in the United States found that – in contrast to adult boot camps – more time was spent on rehabilitative activities than the military-based components (Cronin and Han, 1994). This difference is partly because States mandate academic education for young offenders, so all programmes spent at least three hours a day on this. Two of the eight programmes spent more than three-quarters of their time on rehabilitative activities. Some programmes also included off-site work activities.

Meade and Steiner (2010) reported the number of hours per day that participants spent in education, counselling or substance abuse counselling. Programmes included between 1 and 5.6 hours per day in these rehabilitative treatment components. Rehabilitative intervention components included a range of topics, such as life and financial skills, anger management, rational thinking, problem solving, self-esteem, leadership training, and mentoring. Some rehabilitative elements also incorporated parents. The review coded rehabilitative components as present or absent without further detail as to the nature of these activities.

Reviews emphasised the proportion of time spent engaging in activities other than physical exercise or labour. Wilson et al. (2008) categorised programmes as either having a primary or secondary focus on rehabilitative treatment, i.e., where most of the day is spent in educational, therapeutic, or psychological programmes rather than physical exercise.

Targeted or Universal

Military-style boot camps are targeted intervention approaches that are implemented with youth who have offended or come into contact with the criminal justice system (i.e., have been cautioned or given an official warning). Those who have committed a violent offence or who have a previous conviction may not be eligible for a boot camp (Riphagen, 2010).

However, eligibility criteria vary between programmes and will depend on the mitigating and aggravating factors involved in the case.

Boot camps are interventions designed for youth who are considered at high-risk for reoffending and act as an intermediate sanction, between a caution or dismissal and incarceration (Riphagen, 2010). These programmes aim to reduce the risk of reoffending, prevent further problem behaviours, and also improve educational attainment, prosocial attitudes and vocational skills of young offenders. In Australia, boot camps have also been used as a preventive intervention for youth (KPMG, 2014).

Implementation setting and personnel

Boot camp programmes are implemented in very specific settings. Meade and Steiner (2010) state that youth are sent to residential facilities, away from their families and community, and assigned to military-style squads or platoons and stay in dormitories that resemble military barracks. Programme activities are implemented and supervised by trained staff, and youth are often expected to address staff using military titles (Meade & Steiner, 2010).

Duration and scale

Meade and Steiner (2010) found that boot camp interventions are typically implemented for short periods, lasting between 90 and 180 days. Cronin and Han (1994) report a similar range for eight programmes in the United States: 90-120 days, with just one programme being shorter (30 days) and one longer (average 168 days).

Theory of change/presumed causal mechanisms

The primary goal of boot camp programmes is to change participants' problem behaviours, such as offending, anti-social behaviour, and violence. One possible theory of change that underpins military-style boot camp programmes is that, "the short-term confinement, coupled with the strict discipline and demanding physical exercise and labour common to boot camps, can "shock" participants into behaving in a respectful and obedient manner, making them more likely to comply with rules or laws upon completion of the programme" (Meade & Steiner, 2010, p. 842).

Other potential causal mechanisms are that the routine, discipline, and interaction with programme staff may teach participants self-control, respect, and other prosocial behaviours (Meade & Steiner, 2010). These skills may in turn reduce the risk of reoffending following completion of the programme.

Evidence base

Descriptive overview

Wilson et al. (2008) reported the effects of military-style boot camps on reoffending rates from 32 empirical evaluations. Most of these studies were conducted in the USA, but the review included two evaluations of boot camps in the United Kingdom (Farrington et al., 2002). Effect sizes were estimated for each unique treatment-control comparison from primary evaluations. Reoffending rates were measured using dichotomous variables and follow-up periods of 12-months, 24-months, and 36-months after baseline. Most of the evaluations included samples that were all male, with only 2 evaluations of all-female boot camps and 7 evaluations of mixed gender boot camps, although these numbers included boot camps for adults too. The gender breakdown is not provided for juvenile boot camps independently. The review did not include information about the ethnicity of the young people who participated in boot camp interventions. In Australia, it was observed that Aboriginal youth were less likely to be referred to boot camp programmes (KPMG, 2014).

Assessment of the strength of evidence

We have confidence that, at the time of writing, the review by Wilson et al. (2008) is the best available evidence on the effectiveness of bootcamps. Our decision rule for determining the evidence rating is summarised in the technical guide.

A modified version of the AMSTAR critical appraisal tool was used to appraise the review by Wilson et al. (2008) by two independent coders. According to this tool, the Wilson et al. (2008) review was rated as 'medium'. The results are summarised in Annex 3. The reviews by Meade and Steiner (2010) and Riphagen (2010) were not assessed as they were not used to calculate the impact estimate for the effectiveness of boot camps.

Wilson et al. (2008) adequately specified the research questions and the inclusion/exclusion criteria, relating to the population, intervention, comparison group and outcome of interest. Specifically, Wilson et al. (2008) included evaluations where one group of participants were placed in correctional boot camps, shock incarceration, or an intensive incarceration programme (described as a residential programme for offenders that incorporated a militaristic environment and/or structured strenuous physical activity other than work) and rates of reoffending were compared with those in a comparison group who were on probation or incarcerated in an alternative facility.

Wilson et al. (2008) specified that they created a coding protocol before undertaking the review but did not state whether or not the protocol was published. Wilson et al. (2008, p. 9) included evaluations that were conducted using "... variations on a treatment versus comparison group research design with a post-test and possible follow-up measurement points". No reason for including these designs which may include weaker study designs was provided.

The review reported a comprehensive literature search strategy of different databases, using designated keywords. No restrictions were placed on inclusion criteria to only peer-reviewed publications or only reports in English. Evaluations that met inclusion criteria for the review were coded by two independent coders and disagreements were settled by two of the authors.

Wilson et al. (2008) did not evaluate risk of bias, beyond normal publication bias analysis.

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The reviewers conducted a meta-analysis and reported detailed information on the synthesis and estimation of weighted effect sizes and adequately reported the heterogeneity between primary effects. Separate weighted effect sizes for independent outcomes were reported and multiple moderators were assessed as possible explanations for heterogeneity among primary effect sizes.

Wilson et al. (2008) provided a direct estimate of the effect of boot camps on youth reoffending based on 17 studies. However, the estimate of heterogeneity between these studies was not provided. Overall, when adult offenders were included, Wilson et al. (2008) provide an estimate of the effect of boot camps on any recidivism outcome based on 43 studies and the results were highly heterogeneous ($I^2 = 72\%$). It is assumed that the heterogeneity between the studies reporting youth offending outcomes was also high.

Wilson et al. (2008) reported a direct estimate of bootcamps on youth reoffending for mixed violent and non-violent crimes based on 12 evaluations. Given the assumed high heterogeneity and the 'medium' rating as per the AMSTAR tool, the evidence rating is 4. This is the review that informs the headline impact estimate.

Wilson et al. (2008) also reported a direct estimate of the effect of bootcamps on youth reoffending for non-violent crimes based on 5 evaluations. The evidence rating is 2, marked down for the lack of information on the heterogeneity and the small number of evaluations.

Impact

Summary impact measure

Wilson et al. (2008) report the effects of boot camp programmes on non-violent and violent youth reoffending. The mean effect sizes for non-violent crimes and for mixed violent and non-violent crimes are reported in Table 1. The overall mean effect size suggests that boot camps were not effective in reducing reoffending for juvenile offenders (OR = 0.94, 95% CI 0.76 – 1.15, $n = 17$).

Table 1

Mean effect sizes for youth reoffending outcomes from Wilson et al. (2008)

Outcome	N of studies	ES	CI	<i>p</i>	% change	Evidence rating
Non-violent crimes	5	OR = 1.04	0.78 – 1.39	n.s.	2% decrease	2
Mixed violent and non-violent crime	12	OR = 0.88 <i>d</i> = -0.07	0.71 – 1.10	n.s.	6% increase	4

Note: ES = the weighted mean effect size; CI = 95% confidence intervals for the mean ES; *p* = the statistical significance of the mean ES; n.s. = not significant; OR = odds ratio (greater than 1 = desirable effect); *d* = Cohen’s *d*.

In order to convert the odds ratio to a percentage reduction, we assumed that there were equal numbers (*n* = 100) in the experimental and control conditions, and that 50% of persons in the control condition reoffended. With these assumptions, the OR of 1.04 for non-violent offending translated to 49% of people in the experimental group reoffending, which is a 2% decrease. For mixed violent and non-violent reoffending the OR of 0.88 translated into 53% of people in the experimental group reoffending, a 6% increase. This transformation is explained in further detail in Annex 1.

It is plausible to assume a 50% overall reoffending rate; for example, in England and Wales, 37% of juvenile offenders in the period October to December 2018 had proven (recorded) reoffending only one year later (Ministry of Justice, 2020). It would be expected that their reoffending rate would soon reach 50% within another two years or so.

Moderators and mediators

Wilson et al. (2008) studied a number of moderator variables relating to the methodology of the evaluation and the programme characteristics. Results of methodological moderator analyses were not reported independently for juvenile boot camps.

A range of moderators were included to reflect different programme characteristics, such as whether the programme included aftercare, academic education, vocational education, drug treatment, or group/individual counselling. Programmes were also compared based on whether or not rehabilitation was the primary or secondary focus of the intervention.

The results of moderator analyses suggest that none of the programme characteristics were associated with desirable effects on reoffending, except for the presence of counselling. Boot camps for juvenile offenders that included counselling (OR = 1.02, 95% CI 0.87 – 1.21, $n = 14$) were significantly more effective than boot camps that did not include counselling (OR = 0.68, 95% CI 0.51 – 0.92, $n = 3$). None of the mean effects for other programme characteristics were statistically significant, and Wilson et al. (2008) comment that coding programme characteristics was particularly challenging for boot camp programmes. The most important finding is that for juveniles, boot camps with a primary focus on rehabilitation were more effective than programmes with a secondary focus on rehabilitation. The latter referred to programmes where the primary focus was on military regimes and physical labour/exercise and were related to an increase in reoffending.

Implementation and Cost analysis

Implementation

Some implementation evidence is available in Farrington et al.'s evaluation (2002) of the two English boot camps in the 1990s. These were the Thorn Cross High Intensity Treatment (HIT) programme and the Colchester Military Corrective Training Centre (MCTC). We also present findings from a more recent study of two boot camp programmes, the Early Intervention Youth Boot Camp and the Sentenced Youth Boot Camp, in Australia (KPMG, 2014).

The boot camp component of the programme for sentenced youth in Queensland was described as 'one month at Lincoln Springs where activities include horse riding, leatherwork, adventure-based learning, and music/art lessons'. The MCTC programme was run by the military in a military detention centre. The Thorn Cross HIT programme added military elements (e.g., drilling) to the usual YOI programme. Both English boot camp regimes included a demanding 16-hour daily schedule.

It is striking from the English studies that young people liked the physical activity aspects of the regime, and they also took pride in their appearance and cleanliness of their rooms. They liked having things to do rather than nothing to do as in other YOIs. In both cases, they remarked on the absence of bullying compared to normal YOIs, and abstaining from drugs as the regime would spot drug use. At the same time, in both cases it is recorded that the young people did not respond well to discipline. At Thorn Cross many failed to complete the programme and several absconded, which was not possible at Colchester as the site was a military detention centre with armed guards on watch towers.

Across all four cases, the location of the boot camp was mentioned as an issue. The sites were usually far from the young person's home – and, in the case of the Australian sites, far from anywhere. This fact limited possible family support, which can be an important protective factor. It also limited access to education and employment opportunities and community reintegration.

Lack of community consultation was also an issue. In Australia this was mainly because the Aboriginal community wanted to be involved in the treatment of its youth. In England, the local Colchester community was not happy at having a YOI added in its town.

For the English cases staff were trained for the new approach and initially enthusiastic, but enthusiasm waned because of delays in getting the first intake. In Colchester the programme was mainly run by the military staff, as prison staff were often redeployed elsewhere because the Prison Service managers were not very supportive of the programme. Morale fell further once closure was announced. (The MCTC regime was an initiative of the Conservative government and was closed after Labour came to power in 1997.) Nonetheless, staff were viewed positively in their attitude and approach by the young offenders, especially the military staff who took more of a mentoring role. Young people saw the prison staff as 'screws' even if they tried to have a different approach.

A common theme was weak follow-up or aftercare, which was not part of the Colchester programme at all. The Australian cases show that aftercare was weak, with no connection to

services or substantive support. As noted above, the distance of facilities from home communities made community reintegration difficult. Annex 2 provides more information about implementation.

Cost data

The systematic review by Riphagen (2010) includes a discussion on the cost-effectiveness of boot camp programmes. The results were inconsistent, and the author found it difficult to draw a concrete conclusion. Overall, the cost analysis suggested that, while boot camps may be associated with lower costs than incarceration, these programmes were not more effective in reducing reoffending and, thus, not cost-effective.

Farrington et al. (2002) and Jolliffe et al. (2013) reported the cost-effectiveness of the two military boot camp regimes. Overall the costs of the boot camps were higher than costs incurred by sending youth in the control group to YOIs. Measured as the cost per offender per day of the programme, the high cost of boot camps was especially apparent for the MCTC in Colchester, which was referenced as the 'Home Office Hilton' in the press. However, the cost per day may not be the relevant measure if the programme is shorter than the alternative custodial sentence. And differences in the effectiveness of the two regimes would result in differences in cost-effectiveness.

Referring to Thorn Cross, Farrington et al. (2002) reported that the extra cost of the regime was £2,441 per inmate (at 1999 prices) but £2,480 per inmate was saved (based on Home Office estimates of the costs of crimes) because of fewer recorded crimes in a 2-year follow-up period. Based on offences leading to reconviction, a cost-benefit analysis showed that the costs saved from crimes prevented paid for the costs of implementing the programme. Assuming that real crimes were 5 times as common as detected crimes, the true benefit-to-cost ratio could have been 5:1 after two years. In a longitudinal follow-up study, Jolliffe et al. (2013) found that overall, the cumulative cost savings of Thorn Cross increased over time and the benefit:cost ratio, based on fewer convictions, increased to 3.9 to 1 after 10 years.

However, the MCTC was not cost-effective. Farrington et al. (2002) reported that young offenders who participated in the boot camp were not less likely to reoffend than the control group and they also committed “more costly offences than did control YOs”. When undetected offences were accounted for, an estimated 89p was lost for every £1 invested in the boot camp programme (Farrington et al., 2002).

Findings from UK/Ireland

As mentioned, a Home Office research study in 2002 reported the effects of two “intensive regimes” for young offenders; the Thorn Cross High Intensity Training (HIT) centre and the Colchester Military Corrective Training Centre (MCTC) (Farrington et al., 2002). These regimes were intended to deter young offenders and were labelled as ‘boot camps’ but the authors stated that the military regimes did not exactly mirror American-style boot camps.

In Thorn Cross, the HIT centre was implemented in a YOI. An existing young offender treatment regime existed at the YOI, which included educational, life skills, vocational training, a pre-release work placement and specific programmes designed to address offending behaviour. The evaluation measured the effectiveness of adding a military training regime to existing treatment efforts.

In Colchester, the MCTC was an “establishment for military offenders run by military staff” (Farrington, 2002, p. 5). The centre did not have any existing formal treatment programmes for young offenders, but there was a focus on education, trade training, job applications, money management and similar life skills.

The evaluation compared the effectiveness of these regimes, using a control group that attended other YOIs and did not participate in the military boot camp regimes. Reconviction data was available for 176 HIT young offenders who participated in the regime and 127 young offenders in the control group (Farrington et al., 2002). The following summarises the results based on: (1) reconviction data one-year after completion; and (2) reconviction data two-years after completion.

1. One-year reconviction data:

Participants in earlier intakes to the boot camp seemed to benefit from the programme. Farrington et al. (2002) found that the reoffending rate for these youth was 27.3%, in comparison to 49.1% for the control group. The authors suggest that this was because there was a higher staff to young person ratio and staff were possibly more enthusiastic about the programme in the beginning. The findings also suggested that boot camps may be more effective for medium-risk offenders and least effective for those who committed violent offences. Boot camps were found to be most effective for youth who committed 'other offences' (i.e., not violent or burglary offences) and for more experienced offenders (i.e., those who had more previous convictions).

The evaluation included a small number of "non-white" participants (e.g., 18 of the 176 youth in the experimental group were 'non-white'), and the results suggest that boot camps were possibly more effective for non-white youth. Time spent in prison prior to participating in the boot camp did not seem to affect reconviction rates. All of the youth in the experimental group had spent time in other YOIs, but the time served in the HIT centre was not related to effectiveness.

2. Two-year reconviction data

When predicted and actual reconviction probabilities were compared, these were similar for youth in the experimental group compared to the control group. However, the HIT group took longer to reoffend (228 as opposed to 177 days on average) and committed fewer offences (3.5 as opposed to 5.1 on average). The results from reconviction data two years after completion of the programme suggest that the programme worked best for younger offenders and offenders who committed 'other offences' (i.e., not violent or burglary offences). Youth in the experimental group who had 3-6 previous convictions before participating in the boot camp also fared better after two years, and were less likely to have been reconvicted, in comparison to similar youth in the control group. Youth who behaved well during the programme and were

not adjudicated for an offence throughout the regime were also less likely to be reconvicted after two years.

The MCTC was evaluated using reconviction data from 61 experimental and 97 control participants. The results showed that, when predicted reconviction rates were accounted for, there was no evidence to suggest that the MCTC participants were less likely to reoffend than young offenders in the control group. The reconviction rate for non-completers was similar to the reconviction rate after two years for the experimental youth who completed the programme.

Another important result was related to progress through the MCTC programme. Stage 1 involved mostly physical exercise and military discipline, and Stage 2 incorporated education, skills training, employment support and increased individuality and agency (e.g., being allowed to wear personal clothing items and have personal items in dorm rooms). Stage 3 incorporated more freedoms and participation in community projects outside of the MCTC site. Farrington et al. (2002) found that youth in the experimental group who took longer on average to complete stage 1 (i.e., more than 8 weeks) had a lower reconviction rate after one year, but a higher reconviction rate after two years. Some youth never reached stage 3, but Farrington et al. (2002) found that this did not impact reconviction rates.

Jolliffe et al. (2013) published a 10-year longitudinal follow-up of the reconviction data for young offenders who completed the HIT regime. The results suggested that, whilst young offenders who participated in the regime were less likely to reoffend, the difference in prevalence (% convicted) between the experimental and control groups declined over time (Jolliffe et al., 2013). However, the cumulative number of offences that were 'saved', or not committed, increased over time. After 2 years, the cumulative number of convictions saved by the HIT regime was 1.35 per offender, but after 10 years the number was 3.35 per offender.

What do we need to know? What don't we know?

There is a dilemma in interpreting and using the evidence. Harsh regimes are politically popular. Moreover, many young people who have offended like the physical activity and

personal cleanliness parts of the programme, though not so much the disciplinary aspects. But the evidence has long shown that the military aspect is not effective, as well as being expensive. Hence, there has been a trend toward more education and rehabilitation in programmes. The issue could be that youth are released back into a high-risk environment (with anti-social peers and poor employment prospects) with inadequate support such as education, employment and practical life skills training. A boot camp should dedicate more time to helping youth develop the skills to better promote successful reintegration into the community and desist from crime.

Moreover, we do not know whether boot camps could be an effective approach to the prevention of violence (e.g., if implemented with young people who have not yet offended but are considered 'high-risk') or as an intervention (e.g., if implemented with young people who have offended, as in Wilson et al., 2008 review).

Given the current interest in boot camps, programmes to be tested should bear in mind these design principles for testing in evaluations of such programmes:

- Focus on physical activity such as sports and outward bound/adventure rather than discipline
- Consider the use of uniforms and personal and room cleanliness inspections
- Have staff responsible for these activities who have a separate identity from regular prison staff
- Include rehabilitative and therapeutic components
- Ensure adequate discharge planning, including connection to services prior to discharge
- Include connections to local sports and fitness facilities in discharge planning

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Annex 1: Effect size calculation

This annex shows the calculation based on the results and assumptions given in the text. We assume 200 youth, evenly divided between treatment and comparison groups. That means there are 100 youth in the control group and 100 youth in the treatment group. Assuming that 50% of youth in the control group reoffended, the mean effect sizes for Wilson et al. (2008) can be easily transformed to a percentage reduction in reoffending.

If the odds ratio for reoffending (non-violent crime) is 1.04, then using the table below and the formula for an OR, we can estimate that the value of X. The odds ratio is estimated as: $A \cdot D / B \cdot C$, where A is the number of individuals who do not reoffend in the treatment group, B is the number of individuals who reoffend in the treatment group, C is the number of individuals who do not reoffend the control group, and D is the number of individuals who reoffend in the control group. An odds ratio greater than 1 represents a desirable impact of the intervention (i.e., a decrease in reoffending), while an odds ratio less than 1 represents an undesirable impact of the intervention (i.e., an increase in reoffending).

	No		
	reoffending	Reoffend	Total
Treatment	100-x	x	100
Control	50	50	100

The value of X is 49.020 in the case of non-violent reoffending in the Wilson et al. (2008) review. Therefore, the relative reduction in non-violent reoffending is $(50 - 49.020)/50 = 1.96\%$. In relation to mixed violent and non-violent reoffending reported by Wilson et al. (2018), the odds ratio is 0.88 and the value of X is 53.192. Therefore, the relative increase in reoffending is 6.38%: $[(53.192-50)/50] \cdot 100$.

The prevalence of reoffending is likely to vary between studies and can be influenced greatly by the type of report (e.g., self-report or official crime data), the time period (e.g., reoffending over 12 months, 24 months or 48 months), and the types of crime included. If we were to adjust our assumption that 50% of the control group reoffend, the overall relative change in the intervention group is not greatly affected.

For example, if we assume that 40% of the control group reoffend, the 2x2 table would be as follows and the value of X is 39.063 (Wilson et al., 2008; non-violent crime). Therefore, the relative reduction is 2.34% (i.e., $(40 - 39.063)/40 \times 100$).

	No		
	reoffending	Reoffend	Total
Treatment	100-x	x	100
Control	60	40	100

Similarly, if we assume that 60% of the control group reoffend, the value of X is 59.055 and the relative reduction in non-violent reoffending is 1.58%. Given, the significant difference in the assumed prevalence of reoffending, the percentage relative reduction does not vary in a similar fashion. Table 2 shows this further.

Table 2

Variation in the relative reduction in reoffending depending on assumptions about prevalence

	Non-violent reoffending OR = 1.04	Mixed violent and non-violent reoffending OR = 0.88
Assumed prevalence	Relative change	
40%	2.34% decrease	7.76% increase
50%	1.96% decrease	6.38% increase
60%	1.58% decrease	5.04% increase

Annex 2: Overview of qualitative and implementation evidence

Study	Intervention	Issues
<p>Farrington et al. 2002 (Note both interventions are for 18-21 age group)</p>	<p>Thorn Cross HIT: 25 week programme, with a rigorous 16-hour day, starting with drill before breakfast and ending at 10 p.m. following a full and active daily programme. Five phases: assessment, basic skills, vocational training, pre-release, and community placement. Aftercare: work or further training in the community as well as intensive supervision after release</p>	<p>Delay in start up undermined initial enthusiasm.</p> <p>New scheme so participants challenged it, many didn't complete it and some absconded. Staff reluctant to impose military discipline.</p> <p>Long hours meant participants couldn't concentrate by end of day.</p> <p>Participants didn't like classroom-based sessions.</p> <p>Rooms spotless and participants had pride in their appearance.</p> <p>Frequent drug tests meant not worth risk of taking drugs. Also lack of bullying.</p>
	<p>Colchester MCTC: MCTC is a military prison, in which one living unit was used to house YOIs and operated under YOI Rules and Prison Service policy. Regime had 3 stages starting at the most austere and graduating based on performance. Sixteen hour day of activities. No rehabilitation (e.g. drugs) or aftercare.</p>	<p>Annual report: "YOI Colchester has not met with a favourable response, either from the local press and community at large in Colchester, or from the Governor Grade/Senior Management Grade of the Prison Service". Lack of consultation with community. High level of resources questioned by others in Prison Service. Probation officers felt money would be better spent elsewhere. But positive assessment made of culture (lack of bullying) and staff attitudes. Participants liked physical</p>

		activities, and kept berets as souvenir. No bullying or drugs. Delay in start up undermined initial enthusiasm. Military staff had hard time dealing with participants who didn't follow orders. Lack of Prison Officer staff. Participants liked military staff compared to prison staff, former being more like mentors.
KPMG 2014	Early Intervention Youth Boot Camp (for at risk youth): Three phases – residential, community integration, and (voluntary) mentoring.	Residential phase well delivered across three sites, but community integration and mentoring were both varied and generally weak. Lack of Aboriginal referrals although they are disproportionately represented amongst offenders.
	Sentenced Youth Boot Camp: Three phases – residential, community integration, and (voluntary) mentoring. Residential: 'one month at Lincoln Springs where activities include horse riding, leatherwork, adventure-based learning, and music/art lessons'.	Programme came from an election commitment, lack of time for planning and consultation. Rolling intake posed problems for programme management, meaning that a single female could be put with group of males. SYBC was alternative to detention so for serious offenders, but scheme open to less serious offenders who therefore got a 'more serious' sentence than those without the scheme, and mixing low and high risk offenders is problematic. Removing young people to a location far from home

		<p>reduces protective factors. Remote location limited access to community, education, employment and medical facilities.</p> <p>Not implemented as planned: lack of integration between residential and community integration phases, remote location meant family support could not be drawn on, failure to connect to education and employment and no offence focused programming. There were connections to health services and community service projects.</p>
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Annex 3: AMSTAR Quality Rating

Modified AMSTAR item		Scoring guide	Boot camps
			Wilson 2008
1	Did the research questions and inclusion criteria for the review include the components of the PICOS?	To score 'Yes' appraisers should be confident that the 5 elements of PICO are described somewhere in the report	Yes
2	Did the review authors use a comprehensive literature search strategy?	At least two bibliographic databases should be searched (partial yes) plus at least one of website searches or snowballing (yes).	Yes
3	Did the review authors perform study selection in duplicate?	Score yes if double screening or single screening with independent check on at least 5-10%	Yes
4	Did the review authors perform data extraction in duplicate?	Score yes if double coding	Yes
5	Did the review authors describe the included studies in adequate detail?	Score yes if a tabular or narrative summary of included studies is provided.	Yes

6	Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Score yes if there is any discussion of any source of bias such as attrition, and including publication bias.	Partial Yes
7	Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	Yes if the authors report heterogeneity statistic. Partial yes if there is some discussion of heterogeneity.	Yes
8	Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review? Overall	Yes if authors report funding and mention any conflict of interest Medium	Yes



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