Netherlands Code of Conduct for Research Integrity

2018

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KNAW

NFU NETHERLANDS FEDERATION OF UNIVERSITY MEDICAL CENTRES

NWO Netherlands Organisation for Scientific Research

TO2 federatie
De samenwerkende organisaties in toegepast onderzoek

Netherlands Association of Universities of Applied Sciences

vsnu
vereniging van universiteiten
association of universities
THE NETHERLANDS

This is a translated version of the “Nederlandse Gedragscode Wetenschappelijke Integriteit (2018)”. Every effort has been made to ensure its conformity with the original Dutch document. In case of disputes, the authoritative version is the original Dutch document.

The following link ensures that this Code will remain discoverable via the Internet in the long term: https://doi.org/10.17026/dans-2cj-nvwu
The Dutch version of this code can be found via this link.

Contents

Abbreviations used in this Code of Conduct

- **ALLEA:** All European Academies
  http://www.allea.org/
- **KNAW:** Royal Netherlands Academy of Arts and Sciences
  https://www.knaw.nl/en
- **NFU:** Netherlands Federation of University Medical Centres
  http://www.nfu.nl/english
- **NWO:** Netherlands Organisation for Scientific Research
  https://www.nwo.nl/en
- **OECD:** Organisation for Economic Co-operation and Development
  http://www.oecd.org/
- **TO2 federation:** Associated Applied Research Institutes *(Deltares, MARIN, NLR, TNO, WR)*
  https://www.to2-federatie.nl
- **VSNU:** Association of Universities in the Netherlands
  http://www.vsnu.nl/en_GB

Preamble

In the words of the *European Code of Conduct for Research Integrity* (revised version, 2017, hereafter referred to as 'the ALLEA Code'), research is 'the quest for knowledge obtained through systematic study and thinking, observation and experimentation'. Although disciplines may differ in approach and method, they share a motivation to increase and to spread our understanding of ourselves and the world in which we live. In our modern knowledge society, scientific and scholarly research has thereby acquired an indispensable role. In providing knowledge and understanding of all aspects of reality, science and scholarship also provide the building blocks for political decision-making and the stimulus for societal development and economic growth. Increasingly, the sciences and the humanities are subject to more, and better articulated, demands on the part of politics and society.

If scientific and scholarly research is to perform this role properly, research integrity is essential. This holds true for all disciplines. Research in the sciences and the humanities derives its status from the fact that it is a process governed by standards. That normativity is partly methodological and partly ethical in nature, and can be expressed in terms of a number of guiding principles: *honesty, scrupulousness, transparency, independence and responsibility*. Researchers who are not guided by these principles risk harming both the quality and the trustworthiness of research. This can take the form of direct damage, for example to the environment or to patients, and can undermine public trust in scientific and scholarly research as well as mutual trust between individual researchers. It is therefore vital that the principles of research integrity and the ensuing guidelines for good research practices be defined with the greatest possible clarity and be acknowledged and applied as widely as possible. That is the aim of this Code of Conduct, which plays a threefold role.

I For researchers, trainee researchers and students, it provides an educational and normative framework (chapters 2 and 3) that they are expected to internalize and be guided by in their research activities.

II For the executive boards of research institutions and for research integrity committees, it provides a frame of reference when assessing alleged research misconduct (chapters 3 and 5).

III For institutions, it sets out a number of duties of care (chapter 4).

Particularly with regard to the first of these roles, the Code provides both (a) methodological standards (as to what a good researcher does) and (b) ethical standards (as to what a researcher with integrity does). These are also important for the assessment of alleged research misconduct; after all, the boundary between (a) and (b) is not always easy to define. Cases of substantial, systematic and deliberate non-compliance with the methodological standards, in particular, are also objectionable from an ethical perspective. When it amounts to gross negligence, a questionable research practice or 'sloppy science' is more than a matter of mere error or carelessness but rather something that can undermine the very integrity of research. The assessment framework in 5.2 takes this into account.

Since 2004, when the first version of the Netherlands Code of Conduct for Academic Practice was published, there has been a great deal of attention devoted, both in the Netherlands and internationally, to the importance of research integrity and to the potential contribution of codes of conduct. Recently, this has been the occasion for minor changes. However, the situation has now evolved to the point where a new text is needed, one that has clearer standards and greater internal coherence, that accords with international developments and that covers applied, fundamental and practice-oriented research alike.[1] The decision was therefore made to conduct a full review.

Research in the sciences and the humanities will continue to develop in the way it is conducted and organized, as well as in the way it is embedded in society. This, in turn, will lead to evolving views on good research practices. From time to time, the standards for good research practices and the related duties of care must be reviewed and the Code updated. Some areas of research practices are subject to change; for

1. See the Report submitted by the committee reviewing the Code of Conduct for Academic Practice in 2016 to the Association of Universities in the Netherlands (VSNU), the Royal Netherlands Academy of Arts and Sciences (KNAW) and the Netherlands Organisation for Scientific Research (NWO) and the Netherlands Federation of University Medical Centres (NFU): http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/Adviesrapport Commissie Verkenning Herziening Gedragscode Wetenschapsbeoefening 2016.pdf

example, the growing importance of the way data is used and managed and the developments in the area of open science. It is to be expected that these and other advances will require additions and adjustments to the Code in future.

This document is a Code of Conduct for researchers and institutions in the Netherlands, but also respects the scope of international framework documents[2] such as the *Singapore Statement on Research Integrity* (2010),[3] the OECD's *Best Practices for Ensuring Scientific Integrity and Preventing Misconduct* (2007)[4] and ALLEA's recently revised *European Code of Conduct for Research Integrity* (2017).[5] On certain points, the Code presented here offers more specifics and details than the ALLEA code.

Chapter 1 of this Code addresses its scope: to what activities does it apply and who is bound by it? Then, in line with the ALLEA code and comparable documents from many other countries, it covers the following areas:

- Chapter 2 defines five principles of integrity that underlie good research practices.
- Chapter 3 distils these principles into 61 standards for good practices in the respective phases of the research process. Good research requires adherence to these standards throughout that process.
- Chapter 4 formulates institutions' duties of care: they must ensure a working environment that promotes and guarantees good research practices.
- Chapter 5 delineates those cases in which non-compliance with the standards in chapter 3 may constitute research misconduct and a sanction can be imposed: only in serious cases. But even in less serious ones it may be necessary for the institution to take corrective, and possibly also preventive, measures.

The parties primarily responsible for good research are the researchers themselves, their supervisors and the institutions where they work. That said, they also have to deal with the way in which scientific and scholarly research is organized and financed in the Netherlands, within the context of the European Union. Other parties within this system – such as the funders of research (including the government), publishers, journal editors and societal partners – can either facilitate or hinder good research that meets standards of research integrity. Although, as a rule, these parties will not commit to this Code, and in some cases have their own codes or regulations,[6] they should nevertheless – at the very least – be guided by the principles of this Code.

2. An even broader framework is provided by the recently revised UNESCO Recommendation on Science and Scientific Researchers, available at: http://portal.unesco.org/en/ev.php-URL_ID=49455&URL_DO=DO_TOPIC&URL_SECTION=201.html
3. Available at: http://wcrif.org/guidance/singapore-statement.
4. Available at: https://www.oecd.org/sti/sci-tech/40188303.pdf
5. Available at: http://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf
6. Many journals and publishers have committed to the guidelines of the Committee on Publication Ethics (COPE), available at: https://publicationethics.org/resources/guidelines.

1. Scope and transitional provisions

1. Scope and transitional provisions

1.1 To which activities does this Code apply?

1. This Code covers scientific and scholarly research in the broadest sense, as conducted at institutions that adopt it. This encompasses both publicly and privately funded research, be that fundamental, applied or practice-oriented.

2. 'Research' refers to all activities connected to the practice of research – applying for funding, designing and conducting research, engaging in assessment and peer review, serving as an expert and documenting, reporting and publicizing research.

3. The principles and standards of this Code also apply to popular scientific publications, teaching materials and advice provided by researchers, insofar as this can reasonably be required.

4. There are other forms of integrity besides research integrity. The researcher must treat subordinates, students and colleagues with respect, for example, and must refrain from committing fraud with expense statements. Insofar as these forms of integrity are not directly related to the research practice, they fall outside the scope of this Code.[7] The boundary is not always clearly defined, however, so this Code also includes some 'borderline' cases.[8]

1.2 Which institutions are bound by this Code?

5. This Code is binding by virtue of self-regulation, and hence binding on those institutions that adopt it.

6. This Code has been adopted by the Royal Netherlands Academy of Arts and Sciences (KNAW), the Netherlands Federation of University Medical Centres (NFU), the Netherlands Organisation for Scientific Research (NWO), Associated Applied Research Institutes (TO2 federation), the Netherlands Association of Universities of Applied Sciences and the Association of Universities in the Netherlands (VSNU). These organizations ensure that the institutes, university medical centres, universities of applied sciences and research universities they represent or oversee also adopt this Code.

7. Other institutions, including private enterprises, can also adopt this Code.

8. Joint research with other institutions (including private ones) that have not adopted this or a comparable Code should only take place if there is sufficient confidence that your own part of the research can be conducted in compliance with this Code and the joint research results meet generally accepted principles of integrity in research.

1.3 To whom does this Code apply?

9. Within the institutions that have adopted this Code, chapters 2 and 3 apply first and foremost to:
   - individual researchers, including PhD students (whether or not they are employed as such by their university) and visiting researchers, part-time researchers or external professionals insofar as they participate in research by or at the institution or disclose their research in its name;
   - supervisors, principal investigators, research directors and managers insofar as they help determine the design and conduct of research.

7. But they do possibly fall under other integrity codes and/or under statutory regulations.
8. For example, and in line with the ALLEA code, standard 61 in chapter 3 and duty of care 5 in chapter 4.

10. Chapters 2 and 3 also apply to work of other parties involved in research, such as support staff, students or participating citizens, although only the researchers, principal investigators or research directors on whose instructions or under whose responsibility they work are personally accountable for non-compliance with the standards in this Code.

11. Within an educational setting, this Code is meaningful as an object of study and in training courses. Scientific and scholarly research by students therefore falls within its normative framework (chapters 2 and 3). As long as that research is conducted only in an educational context and does not result in publications other than a published thesis, however, non-compliance with the standards of this Code cannot result in a complaints procedure as described in section 5.4 or in imposing sanctions as described in section 5.3.[9]

12. Chapter 4 focuses mainly upon the institutions themselves and the officers employed there in a managerial or executive capacity. One of the duties of those institutions and officers is ensuring that researchers comply with the standards in chapter 3.

1.4 Relationship with other regulations

13. This Code contains general standards for all disciplines in the sciences and humanities and for the institutions adopting it. These standards may be specified or supplemented in writing for each discipline or institution, but never weakened.

14. In some areas that overlap with or are related to research integrity, statutory regulations and codes of conduct are in effect that set requirements for researchers. See the Appendix for a brief overview of these. Failure to comply with such a regulation or code of conduct will in some cases mean that the researcher has also failed to comply with a standard from chapter 3 of this Code. If that is the case, it could result not only in a sanction under that statutory regulations or code of conduct but also in a measure or sanction as referred to in section 5.3.

15. Where application of this Code conflicts with a statutory regulation, the latter prevails.

1.5 Date of entry into force and transitional provisions

16. At those institutions adopting it on or before 1 September 2018, this Code enters into force on 1 October 2018.

17. At institutions adopting it after 1 September 2018, this Code enters into force at a time to be determined by the individual institution.

18. Chapters 2, 3 and 5 of this Code apply to:
    a. research started after this Code has entered into force; and,
    b. research activities started after this Code has entered into force, as part of previously initiated research.

19. The Netherlands Code of Conduct for Academic Practice (2014 revision) is revoked, except in respect of:
    a. research completed before this Code entered into force; and,
    b. research activities initiated before this Code entered into force and not yet completed when it did so.

20. An institution may, in a plan of action established prior to this Code taking effect, determine that one or more of its duties of care as set out in chapter 4 will enter into force at a later date. The plan of action shall mention this date, which may differ per duty.

9. Work by students falls under other regulations, such as the Education and Examination Regulations of their degree programme.

2. Principles

2. Principles

Principles are the basis of integrity in research. They should guide individual researchers as well as other parties involved in research, such as the institutions where it is conducted, publishers, scientific editors, funding bodies and scientific and scholarly societies – all of which, given their role and interest in responsible research practices, may be expected to foster integrity.

This Code is based on the following five, widely supported principles.[10] In each case an explanation, with examples, is provided in italics detailing their impact on the practice of research. As such, these explanations link the principles with the standards presented in chapter 3.

1. Honesty

Honesty means, among other things, reporting the research process accurately, taking alternative opinions and counterarguments seriously, being open about margins of uncertainty, refraining from making unfounded claims, refraining from fabricating or falsifying data or sources and refraining from presenting results more favourably or unfavourably than they actually are.

2. Scrupulousness

Scrupulousness means, among other things, using methods that are scientific or scholarly and exercising the best possible care in designing, undertaking, reporting and disseminating research.

3. Transparency

Transparency means, among other things, ensuring that it is clear to others what data the research was based on, how the data were obtained, what and how results were achieved and what role was played by external stakeholders. If parts of the research or data are not to be made public, the researcher must provide a good account of why this is not possible. It must be evident, at least to peers, how the research was conducted and what the various phases of the research process were. At the very least, this means that the line of reasoning must be clear and that the steps in the research process must be verifiable.

4. Independence

Independence means, among other things, not allowing the choice of method, the assessment of data, the weight attributed to alternative statements or the assessment of others' research or research proposals to be guided by non-scientific or non-scholarly considerations (e.g., those of a commercial or political nature). In this sense, independence also includes impartiality. Independence is required at all times in the design, conduct and reporting of research, although not necessarily in the choice of research topic and research question.

5. Responsibility

Responsibility means, among other things, acknowledging the fact that a researcher does not operate in isolation and hence taking into consideration – within reasonable limits – the legitimate interests of human and animal test subjects, as well as those of commissioning parties, funding bodies and the environment. Responsibility also means conducting research that is scientifically and/or societally relevant.

Principles can be regarded as 'virtues' of a good researcher, guiding them towards the right choices in all kinds of circumstances. The most important of these are specified in chapter 3, in the form of standards. By their very nature, however, principles are less subject to change than the standards they give rise to, which

10. For a justification of the choice for these particular five principles, in part against the background of common international practice, see the report submitted by the committee reviewing the Code of Conduct for Academic Practice in 2016 to the Association of Universities in the Netherlands (VSNU), the Royal Netherlands Academy of Arts and Sciences (KNAW) the Netherlands Organisation for Scientific Research (NWO) and the Netherlands Federation of University Medical Centres (NFU): http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/Adviesrapport Commissie Verkenning Herziening Gedragscode Wetenschapsbeoefening 2016.pdf

sometimes need to be adapted or extended as research practices change. All such revisions must remain true to the principles underlying them.

Principles are also guiding factors in cases not covered by the standards described in chapter 3. In such cases, even if an action is in conflict with a principle, as long as it violates none of the standards itemized in chapter 3 nor any additional standard established by a discipline or institution, then sanctions as mentioned in chapter 5 will not be imposed.

Principles may sometimes clash. On occasion, for example, responsibility towards a commissioning party or the need to safeguard public security restricts the extent to which a researcher can be transparent. In such cases, it will be necessary to determine which principles should be given priority. Where possible and necessary, these considerations have already been taken into account in drafting the standards listed in chapter 3.

3. Standards for good research practices

3. Standards for good research practices

3.1 Introduction

In this chapter, the principles described above are further elaborated into more specific standards for good research practices. These set out what researchers must take into consideration in their work, individually and as a team. They are for the most part presented separately for each individual phase of the research process: design, conduct, reporting, assessment and peer review and communication. The chapter concludes, in 3.7, with a number of standards applicable to all phases. In their elaboration and application, the differences between fundamental, applied and practice-oriented research may be relevant.

The standards included in this chapter are *general* ones. They may be specified or supplemented in writing, depending upon the discipline or institution, but not weakened.

3.2 Design

1. Consider the interests of science and scholarship and/or society when determining the subject and structure of your research.
2. Conduct research that can be of scientific, scholarly and/or societal relevance.
3. Do not make unsubstantiated claims about potential results.
4. Take into account the latest scientific and scholarly insights.
5. Make sure that your research design can answer the research question.
6. Ensure that the methods you employ are well justified.
7. If the research is conducted on commission and/or funded by third parties, always specify who the commissioning party and/or funding body is.
8. Be open about the role of external stakeholders and possible conflicts of interest.[11]
9. In research with external partners, make clear written agreements about research integrity and related matters such as intellectual property rights.
10. As necessary, describe how the collected research data are organized and classified so that they can be verified and reused.
11. As far as possible, make research findings and research data public subsequent to completion of the research. If this is not possible, establish valid reasons[12] for their non-disclosure
12. a. In the event of an investigation into alleged research misconduct, make all relevant research and data available for verification subject to the confidentiality safeguards established by the board of the institution.
    b. In highly exceptional cases, there may be compelling reasons for components of the research, including data, not to be disclosed to an investigation into alleged research misconduct. Such cases must be recorded and the consent of the board of the institution must be obtained prior to using the components and/or data in question in the scientific or scholarly research. They must also be mentioned in any results published.
13. Ensure that the required permissions are obtained and that, where necessary, an ethical review is conducted.
14. Accept only research assignments that can be undertaken in accordance with the standards in this Code.
15. Enter into joint research with a partner not affiliated with an institution which has adopted this or a comparable Code only if there is sufficient confidence that your own part of the research can be conducted in compliance with this Code and the joint research results meet generally accepted principles of integrity in research.

11. By, for instance, adopting a Declaration of Scientific Independence as recommended in the KNAW report *Wetenschap op bestelling* ("Science to Order", 2005), p. 46.
12. Valid reasons, including confidentiality, can be found in: Council of the European Union, Outcome of Proceedings: The transition towards an Open Science system, paragraph 14 (Brussels, 27/05/2016, 9526/16, via: data.consilium.europa.eu/doc/document/ST-9526-2016-INIT/en/pdf).

3.3 Conduct

16. Conduct your research accurately and with precision.
17. Employ research methods that are scientific and/or scholarly.
18. Make sure that the choice of research methods, data analysis, assessment of results and consideration of possible explanations is not determined by non-scientific or non-scholarly (e.g. commercial or political) interests, arguments or preferences.
19. Do not fabricate data or research results and do not report fabricated material as if it were fact.
20. Do justice to all research results obtained.
21. Do not remove or change results without explicit and proper justification. Do not add fabricated data during the data analysis.
22. Ensure that sources are verifiable.
23. Describe the data collected for and/or used in your research honestly, scrupulously and as transparently as possible.
24. Manage the collected data carefully and store both the raw and processed versions for a period appropriate for the discipline and methodology at issue.
25. Contribute, where appropriate, towards making data findable, accessible, interoperable and reusable in accordance with the FAIR principles.[13]
26. Take into consideration the interests of any humans and animals involved, including test subjects, as well as any risks to the researchers and the environment, while always observing the relevant statutory regulations and codes of conduct.[14]
27. Keep your own level of expertise up to date.
28. Take on only those tasks that fall within your area of expertise.

3.4 Reporting results

29. Do justice to everyone who contributed to the research and to obtaining and/or processing the data.
30. Ensure a fair allocation and ordering of authorship, in line with the standards applicable within the discipline(s) concerned.
31. All authors must have made a genuine intellectual contribution to at least one of the following elements: the design of the research, the acquisition of data, its analysis or the interpretation of findings.
32. All authors must have approved the final version of the research product.
33. All authors are fully responsible for the content of the research product, unless otherwise stated.
34. Present sources, data and arguments in a scrupulous way.
35. Be transparent about the method and working procedure followed and record them where relevant in research protocols, logs, lab journals or reports. The line of reasoning must be clear and the steps in the research process must be verifiable. This usually means that the research must be described in sufficient detail for it to be possible to replicate the data collection and its analysis.
36. Be explicit about any relevant unreported data that has been collected in accordance with the research design and could support conclusions different from those reported.
37. Be clear about results and conclusions, as well as their scope.
38. Be explicit about uncertainties and contraindications, and do not draw unsubstantiated conclusions.
39. Be explicit about serious alternative insights that could be relevant to the interpretation of the data and the research results.
40. When making use of other people's ideas, procedures, results and text, do justice to the research involved and cite the source accurately.
41. Avoid unnecessary reuse of previously published texts of which you were the author or co-author.
    a. Be transparent about reuse by citing the original publication.
    b. Such self-citation is not necessary for reuse on a small scale or of introductory passages and descriptions of the method applied.[15]

13. See the GoFair website: https://www.go-fair.org/fair-principles/
14. See the Appendix for an overview of the most relevant statutory regulations in this context.
15. See KNAW, *Correct Citeren* ("Correct citation practice", 2014): https://www.knaw.nl/en/news/publications/correct-citation-practice.

42. Always provide references when reusing research material that can be used for meta-analysis or the analysis of pooled data.
43. Avoid unnecessary references and do not make the bibliography unnecessarily long.
44. Be open and complete about the role of external stakeholders, commissioning parties, funding bodies, possible conflicts of interest and relevant ancillary activities.
45. As far as possible, make research findings and research data public subsequent to completion of the research. If this is not possible, establish the valid reasons[16] for this.

3.5 Assessment and peer review

46. Be honest and scrupulous as an assessor or peer reviewer, and explain your assessment.
47. Do not use information acquired in the context of an assessment without explicit consent.
48. Do not use the system of peer review to generate additional citations for no apparent reason, with the aim of increasing your own or other people's citation scores ('citation pushing').
49. Refrain from making an assessment if any doubts could arise regarding your independence (for example, because of possible commercial or financial interests).
50. Refrain from making an assessment outside your area of expertise, or do so only in general terms.
51. Be generous in cooperating with internal and external reviews of your own research.
52. Do not establish a journal that does not apply the required standards of quality to its publications, and do not cooperate with any such journal.

3.6 Communication

53. Be honest in public communication and clear about the limitations of the research and your own expertise. Only communicate to the general public about the research results if there is sufficient certainty about them.
54. Be open and honest about your role in the public debate and about the nature and status of your participation in it.
55. Be open and honest about potential conflicts of interest.

3.7 Standards that are applicable to all phases of research

56. As a supervisor, principal investigator, research director or manager, provide for an open and inclusive culture in all phases of research.
57. As a supervisor, principal investigator, research director or manager, refrain from any action which might encourage a researcher to disregard any of the standards in this chapter.
58. Do not delay or hinder the work of other researchers in an inappropriate manner.
59. Call attention to other researchers' non-compliance with the standards as well as inadequate institutional responses to non-compliance, if there is sufficient reason for doing so.
60. In addressing research misconduct, make no accusation that you know or should have known to be incorrect.
61. Do not make improper use of research funds.

16. Valid reasons, including confidentiality, can be found in: Council of the European Union, Outcome of Proceedings: The transition towards an Open Science system, paragraph 14 (Brussels, 27/05/2016, 9526/16, via: data.consilium.europa.eu/doc/document/ST-9526-2016-INIT/en/pdf).

4. Institutions' duties of care

4. Institutions' duties of care

4.1 Introduction

Institutions provide a working environment that promotes and safeguards good research practices. They ensure that researchers can work in a safe, inclusive and open environment where they feel responsible and accountable, can share concerns about dilemmas and can discuss errors made without fearing the consequences ('blame-free reporting').

These obligations on the part of institutions are duties of care. Institutions must fulfil these duties so that researchers can and, in fact, do observe the standards for good research practices. Many of these duties of care apply to distinct levels within an institution, engendering further obligations for personnel working at various levels, particularly supervisors, principal investigators, research directors, managers and executive board members.

The regulated right to raise complaints described in chapter 5 does not apply to the institutional duties of care. Naturally, internal regulatory organs such as the Supervisory Board or representative bodies may concern themselves with ensuring compliance.

4.2 Training and supervision

1. Raise awareness about research integrity within the organization and, where necessary, provide or facilitate training courses for researchers, support staff, research leaders and research managers.
2. Embed a focus on research integrity firmly in educational activities of higher education institutions.
3. Provide a working environment in which responsible research practices are facilitated.
4. Ensure that new researchers and PhD students are supervised by suitably qualified persons.
5. Ensure transparent and fair procedures for appointments, promotions and remuneration.

4.3 Research culture

6. Ensure compliance with all relevant statutory regulations, codes of conduct, instructions and protocols.
7. Encourage a research culture in which the standards in chapter 3 are embedded and take measures if there are signs that they are not being complied with or there is a risk that this will occur.
8. Provide clear instructions, protocols and other means to support researchers and to help them understand what constitutes good research practice within their discipline(s) and institution.
9. Take appropriate measures to prevent non-compliance with the standards. For example, monitor the quality and intensity of the supervision of starting researchers such as PhD students as well as the composition of PhD committees.
10. Provide an open, safe and inclusive research culture in which researchers:
    a. discuss the standards for good research practices,
    b. hold each other accountable for compliance with the standards, and
    c. are prepared to report any reasonable suspicion of non-compliance to the committee or officer referred to in 21 below or a confidential counsellor as referred to in 20 below.

4.4 Data management

11. Provide a research infrastructure in which good data management is the rule and is facilitated.
12. Ensure that, as far as possible, data, software codes, protocols, research material and corresponding metadata can be stored permanently.
13. Ensure that all data, software codes and research materials, published or unpublished, are managed and securely stored for the period appropriate to the discipline(s) and methodology concerned.

14. Ensure that, in accordance with the FAIR principles[17], data is open and accessible to the extent possible and remains confidential to the extent necessary.
15. Ensure that it is clear how data, software codes and research material can be accessed.

4.5 Publication and dissemination

16. Ensure that contracts with commissioning parties and funding bodies include fair agreements about access to and the publication of data and research material.
17. Ensure that the public communication of research results is performed scrupulously.

4.6 Ethical norms and procedures

18. Undertake ethical reviews where necessary; for example, by setting up one or more ethical committees and providing them with adequate support. These committees can provide researchers with binding or non-binding advice on issues such as the use and treatment of patients, human and animal test subjects, the possible risks of publishing data, the use of human tissue, risks to the environment or cultural heritage and potential conflicts of interest.
19. On the institution's website, publish information about its policy with regard to the registration and disclosure of relevant ancillary activities, positions and interests, including the measures in place to implement that policy.
20. Appoint and support easily accessible confidential counsellors for research integrity.
21. Appoint a committee or officer to consider complaints as referred to in section 5.4

17. See the GoFair website: https://www.go-fair.org/fair-principles/.

5. Non-compliance with standards: measures and sanctions

5. Non-compliance with standards: measures and sanctions

5.1 Introduction

In this chapter, 'standard' refers to the standards for good research practices listed in chapter 3, including the additional standards for a discipline or institution referred to in section 3.1. 'Assessment criteria' refers to the factors described in section 5.2C.

Researchers, supervisors, principal investigators, research directors, managers and the executive board members of the institution must always strive to ensure that the standards are fulfilled scrupulously. Non-compliance with them undermines professional responsibility, which harms the research process and the relationship between individual researchers, and possibly also trust in and the credibility of the research. Section 5.2 provides guidelines for institutional boards and for the committees and officers referred to in section 5.4, under 1, in judging the severity of specific cases of non-compliance with standards, including the assessment criteria to be applied. Section 5.3 deals with measures and sanctions to be imposed, if necessary, and section 5.4 addresses the submission and consideration of complaints about alleged instances of research misconduct.

5.2 Research misconduct, questionable research practices and minor shortcomings

A. Research misconduct

In serious cases, non-compliance with one or more standards constitutes 'research misconduct' on the part of the researcher involved as well as, where applicable, the supervisor, principal investigator, research director or manager who incited that non-compliance.

1. The clearest examples of research misconduct are fabrication, falsification and plagiarism.
   - Fabrication means the invention of data or research results and reporting them as if they are fact (chapter 3, standard 19).
   - Falsification means the manipulation of data or research material, equipment or processes to change, withhold or remove data or research results without justification (standard 21).
   - Plagiarism means the use of another person's ideas, work methods, results or texts without appropriate acknowledgement (standards 34, 40). In some cases, however, plagiarism is of such limited extent and significance that its labelling as 'research misconduct' would be excessive.

2. In the event that the following standards are not met, the determination of whether the case in question constitutes 'research misconduct' or a less serious violation will depend on the outcome of an assessment using the criteria as mentioned in section 5.2C:
   - Design: standards 7, 8 and 14.
   - Conduct: standards 18, 22 and 23.
   - Reporting: standards 30, 36, 38, 42, 44 and 45.
   - Assessment and peer review: standards 47 and 49.
   - Communication: standards 53 and 55.
   - General standards: standards 57, 58 and 60.

3. Only in exceptional cases is non-compliance with any of the other standards to be characterized, in the light of the assessment criteria, as 'research misconduct'.

B. Questionable research practices and minor shortcomings

In cases where non-compliance with the standards does not constitute 'research misconduct', it may instead be categorized as 'questionable research practice' or, in the least serious situations, as a 'minor shortcoming'. Which of these descriptions is appropriate in any specific case depends upon the outcome of the assessment using the criteria in section 5.2C. In the event of a 'minor shortcoming', in general there will be no reason to impose measures or sanctions as referred to in section 5.3.

C. Assessment criteria

When the executive board of the institution and the committee or officer referred to in section 5.4, under 1 are considering the case, the following criteria are particularly important:

a. the extent of the non-compliance;
b. the level to which non-compliance was intentional and whether it was a form of gross negligence or was the result of carelessness or ignorance;
c. the possible consequences for the validity of the research in question and for the prevailing scientific knowledge and scholarship;
d. the potential effects on the trust in scientific and scholarly research and between researchers;
e. the potential impact on individuals, society and the environment;
f. the potential benefits for the researcher or other interested parties;
g. whether the matter concerns a scientific or scholarly publication, as opposed to a popularizing article, teaching materials or an advisory report;
h. opinions within the discipline(s) concerning the severity of the non-compliance;
i. the researcher's position and experience;
j. the extent of any prior violations committed by the researcher;
k. whether the institution itself has failed in its duties of care;
l. how much time elapsed before action was taken against the non-compliance within or outside the institution.

5.3 Sanctions and other measures

If the executive board of the institution suspects non-compliance with one or more standards, it ensures that the case is examined honestly and fairly. If such non-compliance is indeed established after proper investigation, it may be deemed appropriate to impose sanctions or other measures. The nature and extent of these will depend, among other things, upon whether the non-compliance is found to constitute 'research misconduct', a 'questionable research practice' or a 'minor shortcoming'. If the suspicion of non-compliance proves unfounded, appropriate remedial measures are taken.

Sanctions

Whenever 'research misconduct' is established, the board of the institution must consider whether it is possible and desirable to impose sanctions. Naturally, any sanction must always be appropriate and proportionate. In serious cases, the institution has the powers to impose penalties within its legal powers, such as a formal reprimand, transfer, demotion or dismissal. A person's authorization to supervise degrees may also be suspended. Furthermore, the institution may deem it necessary to report the matter to the relevant regulatory bodies or to authorities empowered to impose other administrative, disciplinary or criminal sanctions.

Other measures

Regardless of whether a sanction ought to be imposed, it is always important to consider whether other appropriate measures are necessary. This is especially so in the event of repeated non-compliance or more-than-occasional breaches of the standards.

Even when there is no reason to impose sanctions, failure to comply with the standards cannot remain undiscussed. Researchers must always hold each other, their subordinates, their supervisors, principal investigators, research directors and managers accountable, to ensure that quality assurance is improved, that recurrence is prevented and that adverse effects are remedied or mitigated (e.g. by rectifying or retracting publications). The institution's board should take measures itself or ensure that others do so. In this respect, it may make a difference whether the matter is a case of research misconduct, a questionable research practice or a minor shortcoming. It may also prove necessary for the institution to take preventive individual or general measures to ensure that research practices are improved, compliance with all standards is maintained and timely detection will take place (see also the duties of care described in chapter 4).

5.4 Complaints and investigations

If research misconduct is suspected, a complaint can be submitted to a relevant committee or officer appointed by the institution. The institution ensures that a scrupulous and fair procedure is in place to deal with any such complaint, including any judgement resulting from it. This procedure is also followed if the executive board of the institution itself considers it necessary to investigate possible research misconduct, even without receiving a complaint.

The following basic principles apply to the consideration and investigation of complaints.

1. Following a complaint or a request by the institution's board, the matter is investigated by the committee or officer appointed to that end.
2. In this section, 'the respondent' means the person whose conduct is under investigation. This may also be a person who no longer works at or for the institution.
3. A complaint may only be submitted about a suspected case of research misconduct (see section 5.2A).
4. The complaint or request must adequately substantiate why the complainant or petitioner believes that research misconduct has been committed.
5. Complaints related to methodological discussions and standard academic debates are inadmissible.
6. An anonymous complaint of alleged research misconduct will be considered only if the executive board of the institution sees good reason to do so because it believes that:
    a. compelling public or institutional interests are at stake, or interests of the respondent so require; and,
    b. the factual basis for the complaint can be investigated without input from the complainant.
7. The investigating committee or officer can refrain from initiating or continuing an investigation as soon as it becomes clear that the complaint or request:
    a. concerns a purely professional difference of opinion;
    b. is attributable solely to a labour dispute; or,
    c. cannot result in a judgement that the respondent's actions constitute research misconduct.
8. The complainant and the respondent may consult a confidential counsellor.
9. The investigatory procedure regarding the research, as well as any second opinion:
    - shall provide for fair treatment, including hearing both sides and making all relevant information available to both the complainant and the respondent;
    - shall be confidential;
    - shall be organized in such a way that neither the complainant nor the respondent is unnecessarily disadvantaged;
    - shall be completed within a reasonable period of time;
    - shall be conducted by experts with no personal interest in the case; or
    - shall be set down by the institution in a clear, easily accessible regulation.
10. a. The procedure described in point 9 shall, if relevant to the institution, include provisions as to when, and under what conditions, the undisclosed components of scientific research or data shall be made available for verification as part of the investigation. Such provisions shall at least state which persons or officers are authorised to carry out verification checks, how they should be carried out and how the findings are to be reported.
    b. Pursuant to section 3.2, point 12b, the procedure may include provisions stating that, in highly exceptional cases, there may be compelling reasons for components of the research, including data, not to be disclosed to an investigation into alleged research misconduct. Such cases must be recorded and the consent of the board of the institution must be obtained prior to using the components and/or data in question in the scientific research. They must also be mentioned in any results that are made public.
11. The investigating committee or officer may decide, by way of derogation from point 9, first bullet, to withhold certain information from the complainant and/or the respondent if there are compelling reasons to do so.
12. The respondent is presumed innocent until proven otherwise.
13. The investigating committee or official judges whether research misconduct has taken place.
14. After the committee or official has issued its judgement, the executive board of the institution gives its initial judgement on the matter and notifies the complainant and the respondent thereof, in writing and without delay.

15. The complainant and the respondent may request a second opinion within six weeks, for instance from the Netherlands Board on Research Integrity (LOWI).
16. If a second opinion is not requested within six weeks, the executive board of the institution settles on its final judgement. If a second opinion has been requested, the board takes that into consideration in its final judgement.
17. At the same time as issuing its final judgement, the executive board of the institution determines any sanctions or measures as referred to in section 5.3.
18. At least in all cases where research misconduct is established, the executive board of the institution ensures that the findings of the investigation and its final judgement are made public in anonymized form.
19. The board of the institution ensures that the rights of both the complainant and the respondent are protected, and that neither is unnecessarily disadvantaged in their career prospects or otherwise.
20. The board of the institution is not obliged to arrange legal assistance but may decide to do so.

Appendix

Appendix

Examples of statutory regulations and codes of conduct that overlap with or are related to the standards for responsible research practices

1. General Data Protection Regulation (GDPR)
   (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R0679)

2. Public Records Act (Archiefwet)
   (http://wetten.overheid.nl/BWBR0007376/2015-07-18)

3. Genetically Modified Organisms Decree (Besluit genetisch gemodificeerde organismen)
   (http://wetten.overheid.nl/BWBR0035090)

4. Radiation Protection Decree (Besluit stralingsbescherming)
   (http://wetten.overheid.nl/BWBR0012702)

5. Code of Ethics for research in the Social and Behavioural Sciences involving human subjects
   (http://www.nethics.nl/Gedragscode-Ethical-Code/)

6. Research Databases Act (Onderzoeksgegevensbankenwet)
   (http://wetten.overheid.nl/BWBR0010591/2017-09-01)

7. Embryos Act (Embryowet)
   (http://wetten.overheid.nl/BWBR0013797)

8. Code of Conduct for health research
   (https://www.federa.org/codes-conduct)

9. Human tissue and Medical Research: Code of Conduct for Responsible Use
   (https://www.federa.org/codes-conduct)

10. Genetically Modified Organisms Regulations
    (http://wetten.overheid.nl/BWBR0035072)

11. Standard for the protection of animals used for scientific purposes
    (https://eur-lex.europa.eu/legal-content/NL/TXT/?uri=CELEX%3A32010L0063)

12. Association of Universities in the Netherlands (VSNU) Sectorial regulation regarding ancillary activities
    (http://www.vsnu.nl/files/VSNU%202017/Sector%20regeling%20nevenwerkzaamheden%202017.pdf)

13. General Data Protection Regulation (Implementation) Act (Uitvoeringswet Algemene verordening gegevensbescherming)
    (http://wetten.overheid.nl/BWBR0040940/2018-05-25)

14. UNESCO Recommendation on Science and Scientific Researchers
    (http://portal.unesco.org/en/ev.php-URL_ID=49455&URL_DO=DO_TOPIC&URL_SECTION=201.html)

15. Foetal Tissue Act (Wet foetaal weefsel)
    (http://wetten.overheid.nl/BWBR0012983)

16. House for Whistleblowers Act (Wet Huis voor de klokkenluiders)
(http://wetten.overheid.nl/BWBR0037852/2016-07-01)

17. Medical Research (Human Subjects) Act (Wet medisch wetenschappelijk onderzoek met mensen)
(http://wetten.overheid.nl/BWBR0009408)

18. Environmental Management Act (Wet milieubeheer)
(http://wetten.overheid.nl/BWBR0003245)

19. Experiments on Animals Act (Wet op de dierproeven)
(http://wetten.overheid.nl/BWBR0003081)

20. Medical Treatment Contracts Act (Wet op de geneeskundige behandelingsovereenkomst)
(http://wetten.overheid.nl/BWBR0005290/#Boek7_Titeldeel7_Afdeling5)

21. Medical Devices Act (Wet op de medische hulpmiddelen)
(http://wetten.overheid.nl/BWBR0002697)

22. Population Screening Act (Wet op het bevolkingsonderzoek)
(http://wetten.overheid.nl/BWBR0005699)

23. International, European and national legislation regarding intellectual property, including:
    a. Copyright Act (Auteurswet)
    (http://wetten.overheid.nl/BWBR0001886/2017-09-01)
    b. Patents Act 1995 (Rijksoctrooiwet 1995)
    (http://wetten.overheid.nl/BWBR0007118/2017-03-01)
    c. Neighbouring Rights Act (Wet op de naburige rechten)
    (http://wetten.overheid.nl/BWBR0005921/2017-09-01)
    d. Seeds and Plant Materials Act 2005 (Zaaizaad- en plantgoedwet 2005)
    (http://wetten.overheid.nl/BWBR0018040/2017-09-01)

24. Legislation and regulations related to public and state security and state secrets, including:
    a. General Security Requirements for Ministry of Defence Assignments (ABDO 2006 for ongoing assignments, ABDO 2017 for new assignments) (Algemene beveiligingseisen voor defensieopdrachten 2006 en 2017)
    (https://www.defensie.nl/downloads/beleidsnota-s/2006/08/13/abdo-2006)
    (https://www.defensie.nl/downloads/beleidsnota-s/2017/06/13/abdo-2017)
    b. Civil Service Information Security (Classified Information) Decree 2013 (Besluit Voorschrift Informatiebeveiliging Rijksdienst Bijzondere Informatie 2013)
    (http://wetten.overheid.nl/BWBR0033507/2013-06-01)
    c. Judicial Data and Criminal Records Act (Wet justitiële en strafvorderlijke gegevens)
    (http://wetten.overheid.nl/BWBR0014194/2016-01-01)
    d. Police Data Act (Wet politiegegevens)
    (http://wetten.overheid.nl/BWBR0022463/2018-05-01)
    e. Intelligence and Security Services Act 2017 (Wet op de Inlichtingen- en veiligheidsdiensten 2017)
    (http://wetten.overheid.nl/BWBR0039896/2018-05-01)
    f. Security Screening Act (Wet veiligheidsonderzoeken)
    (http://wetten.overheid.nl/BWBR0008277/2015-09-01)

Colophon

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