



Principles of Research Writing & Design
Educational Series

Reviewing Scientific Literature & Grants 101

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Reviewing Scientific Literature

Literature review relevance

Resources

Critically reviewing scientific literature

Tips



Why conduct a literature review

- Helps determine where excess research exist and where new research is needed
- Provides a solid theoretical framework; a proposed study
- Justify a proposed study as one that contributes something new to the body of knowledge
- Framing valid research methodologies, approaches, goals, and questions
- Identify areas of controversy in the literature

Resources



Insert your title and/or abstract here: (or, click [here](#) to search using keywords)

Scramble Clear Show extra options

Find journals Find authors Find articles

Welcome to Jane

Have you recently written a paper, but you're not sure to which journal you should submit it? Or maybe you want to find relevant articles to cite in your paper? Or are you an editor, and do you need to find reviewers for a particular paper? Jane can help!

Just enter the title and/or abstract of the paper in the box, and click on 'Find journals', 'Find authors' or 'Find Articles'. Jane will then compare your document to millions of documents in Medline to find the best matching journals, authors or articles.

Keyword search

Instead of using a title or abstract, you can also search using a keyword search, similar to popular web search engines. Click [here](#) to search using keywords.

[Additional information about Jane](#)

Patient Reported Outcomes Measurement Information System (PROMIS)



The screenshot shows the homepage of the PROMIS website. At the top, the logo 'PROMIS' is displayed in large white letters on a blue background, with a registered trademark symbol and a graphic of a sunburst. Below the logo is the tagline 'Dynamic Tools to Measure Health Outcomes from the Patient Perspective'. To the right of the logo are three small images: a person in a wheelchair, a hand holding a wrist, and a hand holding a small object. Below the logo and tagline is a navigation bar with links for 'About PROMIS', 'Measures', 'Science', 'Software', 'What's New', 'Related Resources', and 'PROMIS For You'. A search bar is also present in the navigation bar. The main content area is divided into several sections. On the left, there is a 'Get PROMIS Instruments' section with a blue background and a 'More...' link. In the center, there is a graphic with a red pencil pointing to a scale labeled 'How often' with categories: 'Always', 'Sometimes', 'Rarely', and 'Never'. On the right, there is a 'Tweets' section showing a tweet from 'PROMIS - NIH @promisNIH' about a presentation at #ARM15. Below the tweets, there are three columns for 'Researchers', 'Clinicians', and 'Patients', each with a description and a list of links. At the bottom, there are three small images: a woman with glasses, a man in a lab coat, and a hand holding a small object.

PROMIS[®]
Dynamic Tools to Measure Health Outcomes from the Patient Perspective

About PROMIS[®] Measures Science Software What's New Related Resources PROMIS[®] For You Search

Get PROMIS Instruments
Get a zip file of available PROMIS instruments.
[More ...](#)

How often
Always
Sometimes
Rarely
Never

Tweets Follow

PROMIS - NIH @promisNIH 1h
Presentation @ using #PROMIS development framework method to develop a new pediatric Pain Behavior measure at #ARM15 bit.ly/1QyVtRM

Tweet to @promisNIH

Researchers
Provides efficient, reliable, and valid assessments of adult and child (pediatric) self-reported health

- ▶ [FAQs](#)
- ▶ [PROMIS Instruments Selected References](#)
- ▶ [PROMIS In Research](#)
- ▶ [Industry](#)
- ▶ [PROMIS International](#)

Clinicians
Provides data about the effect of therapy that cannot be found in traditional clinical measures

- ▶ [FAQs](#)
- ▶ [PROMIS for Clinicians](#)
- ▶ [Select Publications](#)
- ▶ [Computer Adaptive Test \(CAT\) Demonstration](#)

Patients
Measures what you are able to do and how you feel

- ▶ [More on PROMIS](#)
- ▶ [What Patient Reported Outcomes \(PROs\) Are](#)
- ▶ [PROMIS Measures](#)

NIH Toolbox

[What and Why](#) ▾ [How Do I](#) ▾ [Resources](#) ▾ [Publishing-Presentations](#) ▾ [Tech Support](#) ▾ [Terms-Conditions](#) [About Us](#) ▾



NIH Toolbox[®]
For the Assessment of Neurological and Behavioral Function

High Contrast Mode

Search this site...



What and Why?

NIH Toolbox is a multidimensional set of brief measures assessing cognitive, emotional, motor and sensory function from ages 3 to 85, meeting the need for a standard set of measures that can be used as a "common currency" across diverse study designs and settings.

NIH Toolbox monitors neurological and behavioral function over time, and measures the domain constructs across developmental stages. This facilitates the study of functional changes across the lifespan, including evaluating intervention and treatment effectiveness. [Fees may apply for use of the NIH Toolbox in projects not funded by NIH.](#)

[Cognition Domain](#) | [Emotion Domain](#) | [Motor Domain](#) | [Sensation Domain](#)

What and Why?

Updates to NIH Toolbox

News and Announcements

Training News

Frequently Asked Questions

Quick Links to frequently visited places

- [e-Learning](#)
- [Access to NIH Toolbox measures via Assessment Center](#)
- [NIH Toolbox Supplies & Equipment requirements](#)
- [NIH Toolbox Terms and Conditions](#)
- [NIH Toolbox Brochure](#)
- [Contact Us](#)

Emotion Measures

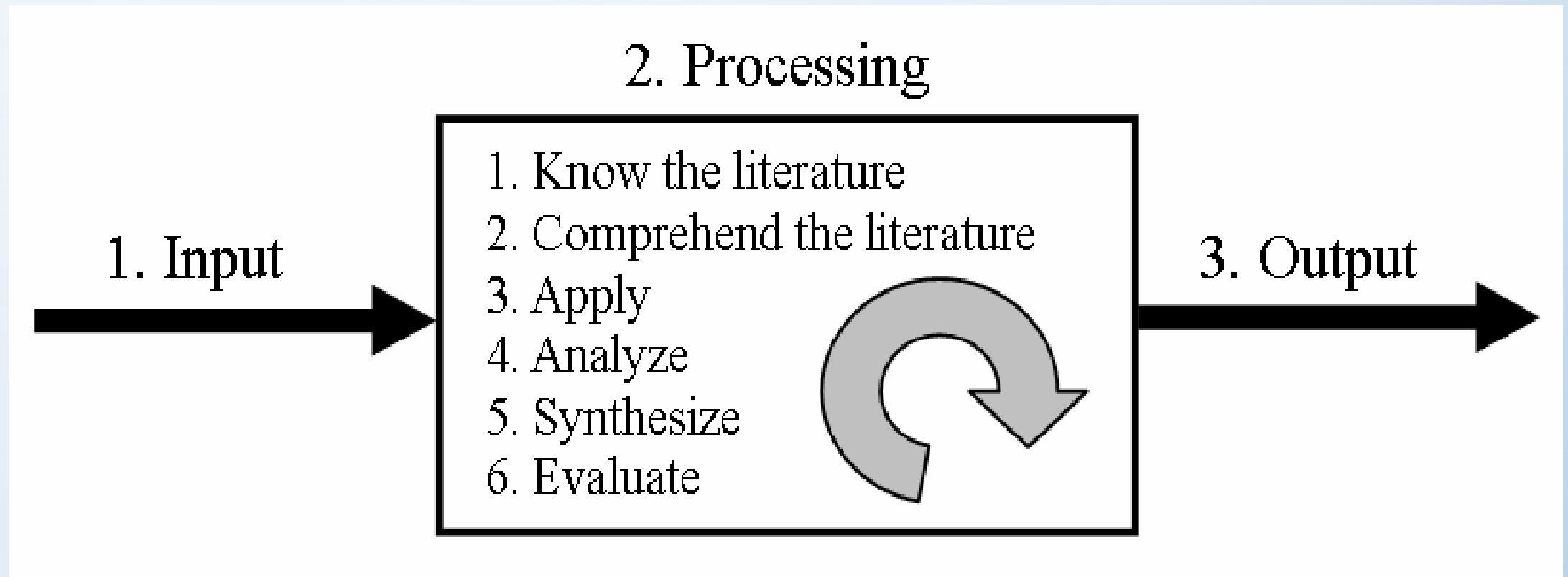
New!

iPad app coming in 2015....

Use of the NIH Toolbox has grown exponentially since first released in 2012. To meet this growing demand, the development team at Northwestern University is creating an iPad app to administer NIH Toolbox instruments.

Core Emotion and Cognition measures will be

The literature review process



Literature Review Tips

- Cite recent literature, unless a seminal body of work
- Be organized- utilize bibliographic management software (endnote, mendely (free), zotero (free), etc)
- Keep records of your findings (template example)

Title & Year	Authors	Topic	Key Points	Relation to your topic



Grants 101

Major grant sponsors

Where to look for grant announcements

Knowing your audience

Major sections of a grant

Grant resources

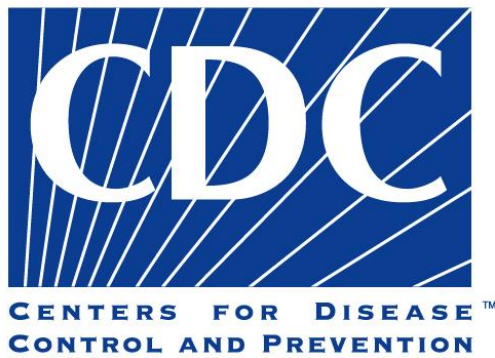


Grant Sponsors

Federal Sponsors



National Institutes
of Health



Foundation Sponsors

BILL & MELINDA
GATES *foundation*



Robert Wood Johnson
Foundation

BURROUGHS
WELLCOME
FUND 

Foundation Sponsors foundationcenter.org

The screenshot shows the homepage of the Foundation Center website. At the top left is the logo, a diamond shape composed of smaller diamonds, with the text "FOUNDATION CENTER" and the tagline "Knowledge to build on." below it. To the right of the logo is a navigation menu with links: Home, Profile, Search, Site Map, Ask Us, About Us, Locations, Newsletters, Press Room, and PND. A prominent orange "DONATE NOW" button is located to the right of the navigation menu. Below the navigation menu is a yellow banner with the following links: Get Started, Find Funders, Gain Knowledge, View Events, and Shop. A "ShareThis" button is also present. The main heading reads "Strengthening the social sector by advancing knowledge about philanthropy." Below this is a large banner for "FOUNDATION MAPS a service of Foundation Center". The banner features a world map with red circles of varying sizes indicating funding locations. The text says "See who is funding what and where around the world" and includes two buttons: "Try It Free" and "Learn More". Below the main banner are three columns of content. The first column is titled "WHAT'S NEW" and features "IssueLab Special Collection: Immigration Strategies" with a photo of people at a counter. The second column is titled "KNOWLEDGE SERVICES" and lists "Information, Analysis, and Technology for Smarter Philanthropy" with a grid of six service icons: FOUNDATION MAPS, FOUNDATION IDEAS, FOUNDATION LANDSCAPES, FOUNDATION RESEARCH, FOUNDATION BENCHMARKERS, and FOUNDATION DATA. The third column is titled "NEWS AND COMMENTARY" and features "News from PND" and "Request for Proposals" with a "More PND» Subscribe»" link.

FOUNDATION CENTER
Knowledge to build on.

Home Profile Search Site Map Ask Us
About Us Locations Newsletters Press Room PND

DONATE NOW

Get Started Find Funders Gain Knowledge View Events Shop

ShareThis

Strengthening the social sector by advancing knowledge about philanthropy.

FOUNDATION MAPS
a service of Foundation Center

See who is funding what and where around the world

Try It Free Learn More

WHAT'S NEW

IssueLab Special Collection: Immigration Strategies

KNOWLEDGE SERVICES

Information, Analysis, and Technology for Smarter Philanthropy

FOUNDATION MAPS FOUNDATION IDEAS FOUNDATION LANDSCAPES
FOUNDATION RESEARCH FOUNDATION BENCHMARKERS FOUNDATION DATA

NEWS AND COMMENTARY

News from PND

Request for Proposals

More PND»
Subscribe»

Federal Sponsors www.grant.gov

The screenshot shows the Grants.gov website. At the top right, there are links for "MANAGE SUBSCRIPTIONS", "REGISTER", and "LOGIN". A search bar contains the text "SEARCH: Grant Opportunities" and "Enter Keyword..." with a "GO" button. Below the search bar is a navigation menu with the following items: HOME, LEARN GRANTS, SEARCH GRANTS, APPLICANTS, GRANTORS, SYSTEM-TO-SYSTEM, FORMS, OUTREACH, and SUPPORT. The main content area features a "Find Grants" section with a video player showing the Washington Monument and a "Search Grant Opportunities" button. Below this is a "Find Open Grant Opportunities" section with tabs for "NEWEST OPPORTUNITIES", "BROWSE CATEGORIES", "BROWSE AGENCIES", and "BROWSE ELIGIBILITIES". A table of grant opportunities is displayed, with columns for "Funding Opportunity Number", "Opportunity Title", and "Agency".

Grants.gov Updates

- Grants.gov Calendar**
Check out our calendar to get the latest updates about our upcoming releases, maintenance, and outages.
- Grants.gov Scheduled Maintenance Outage: July 18-20, 2015**
- Grants.gov Notices - Updated May 11, 2015**
For more information on upcoming changes with user impacts, please visit the Grants.gov notices page for the latest information.
- Grants.gov Releases**
For information about recent changes and enhancements to Grants.gov, review the latest release notes.
- Grants.gov Blog**
Visit the Grants.gov Blog to get up-to-date status of upcoming maintenance and outages.
- DATA Act Section 5 Pilot Program Presentation**
The Department of Health and Human Services (DHHS) recently organized a webinar about the DATA Act Section 5 Pilot Program.
- Financial Assistance**
Grants.gov does not provide personal financial assistance. Please visit our Grant Programs to learn where you may

Funding Opportunity Number	Opportunity Title	Agency
RFA-656-15-000009	Integrated Family Planning Program (IFPP)	Mozambique USAID-Maputo
SCAKAB-15-CA-014-SCA-06152015	Rural Youth Development	U.S. Mission to Afghanistan
ED-GRANTS-061515-001	Office of Innovation and Improvement (OII): Charter Schools Program (CSP): Grants for State Educational Agencies (SEAs) CFDA Number 84.282A	Department of Education
PAR-15-278	NINDS Exploratory Clinical Trials for Small Business (R42)	National Institutes of Health

NIH Grant Process- At a glance



National Institutes of Health Grants Process At-A-Glance



Planning, Writing, and Submitting

Planning: Applicant should start early, collect preliminary data, and determine internal deadlines.

Writing: Applicant often begins writing application several months prior to application due date

Submitting: Applicant organization submits most applications to NIH through the Federal portal, [Grants.gov](https://www.Grants.gov).

Receipt and Referral

1 - 3 Months

Applications compliant with NIH policies are assigned for review by the Division of Receipt and Referral in the Center for Scientific Review (CSR).

CSR assigns application to an NIH Institute/Center (IC) and a Scientific Review Group (SRG).

Scientific Review Officer (SRO) assigns applications to reviewers and readers.

Peer Review

4 - 8 Months

Initial Level of Review: SRG members review and evaluate applications for scientific merit.

Priority Scores: Available to Principal Investigator in eRA Commons.

Summary Statement: Available to Principal Investigator in eRA Commons.

Second Level of Review: Advisory council/board reviews applications.

Award

9 - 10 Months

Pre-Award Process: IC grants management staff conducts final administrative review and negotiates award.*

Notification of Award: Institute/Center issues and sends Notice of Award (NoA) to applicant institution/organization.

Congratulations!
Project period officially begins!

*NIH Requests additional information needed Just-In-Time for award

Know your audience



NIH Institutes & Centers

1. NCI	Cancer Institute	14. NIDA	Drug Abuse
2. NEI	Eye Institute	15. NIEHS	Environmental Health Sciences
3. NHLBI	Heart Lung and Blood	16. NIGMS	General Medical Sciences
4. NHGRI	Human Genome Research	17. NIMH	Mental Health
5. NIA	Aging	18. NIMHD	Minority Health & Health Disparities
6. NIAA	Alcohol Abuse & Alcoholism	19. NINDS	Neurological Disorders & Stroke
7. NIAID	Allergy & Infectious Disease	20. NINR	Nursing Research
8. NIAMS	Arthritis, Musculoskeletal, & Skin Diseases	21. NLM	Library Medicine
9. NBIB	Biomedical imaging & Bioengineering	22. CIT	Center for Information Technology
10. NICHD	Child Health & Human Development	23. CSR	Center for Scientific Review
11. NIDCD	Deafness & other Communication Disorders	24. FIC	Fogarty International Center
12. NIDCR	Dental & Craniofacial Research	25. NCCIH	Center for Complementary & Integrative Health
13. NIDDK	Diabetes, Digestive & Kidney Diseases	26. NCATS	Center for Advancing Translational Sciences

NIH Grants- The Basics

- 1- Start by re(reading) the grant website and request for applications (RFAs)
- 2-Take note of deadlines
- 3- Take note of NIH contact people
- 4- Engage the program officer- his/her job is to assist you with the grant process
 - Begin with an email
 - Arrange a meeting (by phone, at a conference, when you are in DC, etc)

Types of NIH Grants

R03

- Provides limited funding for a short period of time
- (2 years maximum)
- Supports variety of projects: pilot studies, collection of preliminary data, secondary data analysis.
- Budget generally up to \$50,000 per year
- Not renewable

R21

- Exploratory/discovery research
- Encourages new, exploratory and developmental research projects
- Limited to up to two years of funding
- Combined budget for direct costs for the two year project period usually may not exceed \$275,000.
- No preliminary data is generally required

Types of NIH Grants

K99/00

- Up to five years of support consisting of two phases
- 1-2 years mentored support for postdocs
- 3 years of independent support
- Awardees expected to compete successfully for independent R01 support during transition period
- Budget generally up to \$249K (R00 phase)

Secondary Data Analysis

- R21 –type of grant
- Focus on facilitating research that explores innovative hypotheses through the use of existing data sets
- 2 year maximum
- Great way to increase publication record
- Budget vary by NIH institute/center

Diversity Supplements

- Goal is to enhance diversity and re-entry in to the research workforce (two different grants)
- Administrative supplement (provides salary support) for a race/ethnic minority investigator
- Research project must work within the scope of the parent grant (larger NIH grant such as an R01)
- Provides short-term and long-term funding support

NIH Standard Due Dates

New Applications

	Cycle 1	Cycle 2	Cycle 3
RO3	February 16	June 16	October 16
R21	February 16	June 16	October 16
K99/00	February 12	June 12	October 12

Renewal, Resubmission, Revision

	Cycle 1	Cycle 2	Cycle 3
RO3	March 16	July 16	November 16
R21	March 16	July 16	November 16
K99/00	March 12	July 12	November 12

NIH Application –Major Sections

- **Specific Aims**
- **Research Strategy**
 - Sub-sections (Significance, Innovation, Approach)
- Environment
- Protections for Human Subjects
 - Inclusion of Women, Minorities, and Children
 - Targeted Planned Enrollment Table
- Budget
- Budget Justification
- Biosketches
- References
- Letters of support*
- Key personnel documents

Specific Aims & Research Strategy

Specific Aims (1 pg)

- Opening paragraph, current state of the knowledge and summary of gaps
- Innovation of proposed research and how it fills some gaps
- List objectives e.g., test hypotheses, create a novel design, solve a specific problem, challenge an existing paradigm, address barrier in the field, or develop new technology.
- Finish with summary of the potential broad impact of the proposed research will have.

Research Strategy- Significance (1.5pg for R03)

- Explain the importance of problem or critical barrier to progress in the field
- Explain how proposed project improves scientific knowledge.
- Describe how concepts, methods, treatments, or preventative interventions that drive this field will be changed if the proposed aims are achieved.
- Cite seminal, persuasive work from high impact factor journals

Research Strategy

Innovation (approx. 1.5pg)

- Explain how the application challenges and seeks to shift current research
- Describe novel/improvements methods, advantages over what currently exists
- State why you are so enthusiastically proposing the research and why the work should be done
- State what is novel and gaps that will be filled

Approach (2.5-3pgs)

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims
- The data to be analyzed – source, descriptive for sample, etc,
- Variables to be used
- Analysis strategy and procedures
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims

Tips for Early Stage Investigators

- Describe institutional investment in the success of the investigator,
 - Resources for classes, travel, and training
 - Collegial support such as career enrichment programs
 - Availability of organized peer groups
 - Logistical support such as administrative management , oversight ,and best practices training

Overview of how grants are scored

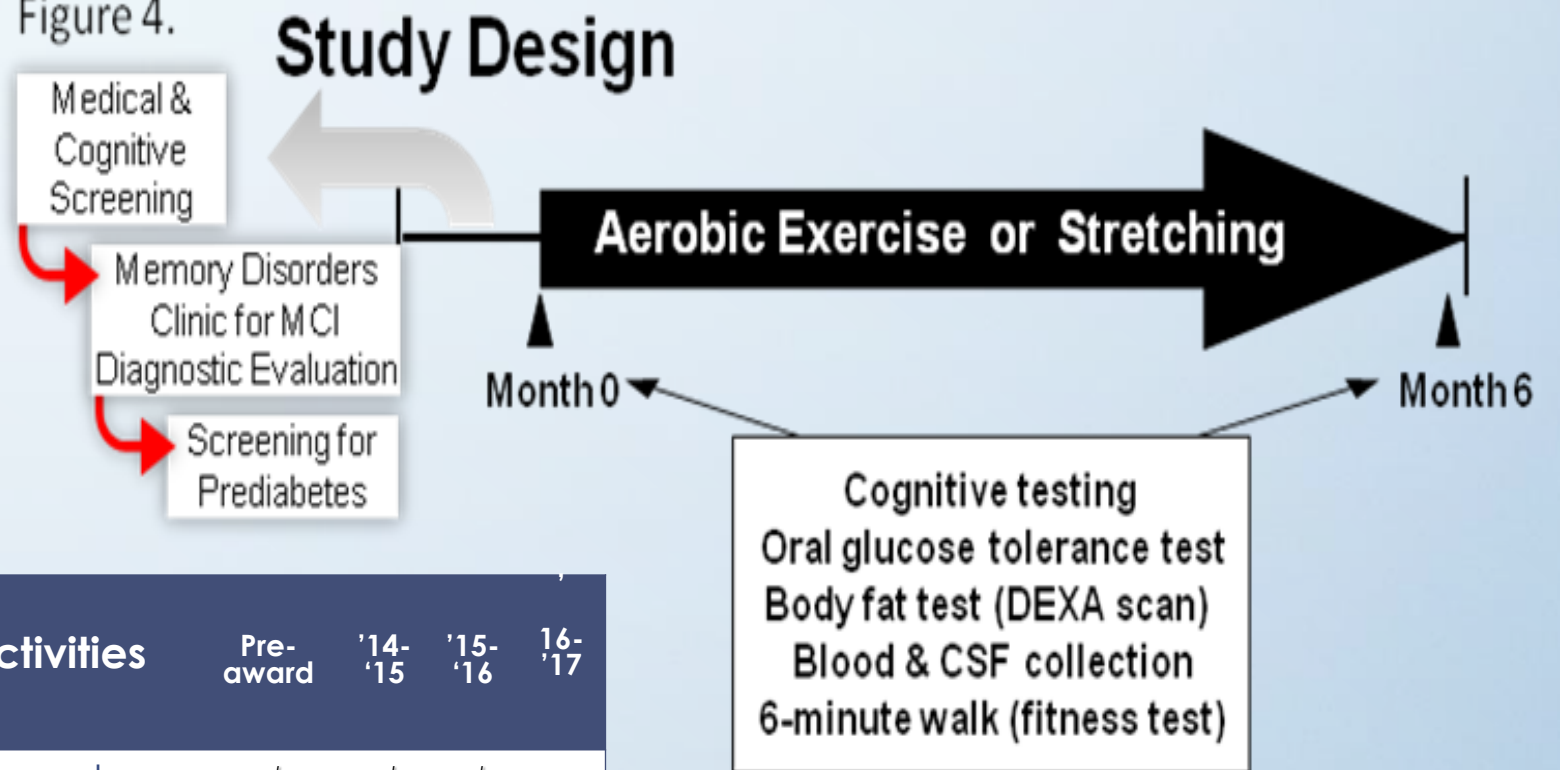
- Scored on a 9-point scale
- **1** indicates exceptionally strong application with essentially no weaknesses.
- **9** indicates an application with serious and substantive weaknesses with very few strengths
- **5** considered an average score
- Scale used by all study group review members to provide overall impact/priority score for each application.
- Scale used by assigned reviewers to score five individual criteria (e.g., Significance, Investigator(s), Innovation, Approach, Environment)

Grant Writing Tips

- 1- Start early- at least 4-5 months to write a grant proposal
- 2- Use short declarative sentences, minimize use of complex sentences
- 3- Cite sparingly in the specific aims section
- 4- Recruit reviewers (experts in the field, in statistics/methods, style (English, grammar, etc) to review your grant prior to submission
- 5- Obtain a copy of a funded grant application
- 6- Become familiar with the grant submission process at your institution
- 7- Avoid jargon
- 8- Include a schematic of grant timeline (even if not requested)

Examples of timelines

Figure 4.



Aim	Research Activities	Pre-award	'14-'15	'15-'16	'16-'17
Determine the association between measures of PA and brain health.	Cohort development	√	√	√	
	Data collection		√	√	
	Data Analysis & preparation of results for publication			√	√

Additional Resources

- (Literature review)- The Literature Review: A Few Tips On Conducting It (word document)
- (Grants) NIH Website <http://grants.nih.gov/grants/oer.htm>
- (Grants) YouTube video of a NIH grant review session
<http://public.csr.nih.gov/aboutcsr/contactcsr/pages/contactorvisitcsrpages/nih-grant-review-process-youtube-videos.aspx>
- (Grants) NIH Reporter
<http://projectreporter.nih.gov/reporter.cfm>



Please complete evaluation forms prior to leaving- Thanks!

Session Schedule

All sessions held at the MVA from 12pm-1pm

Date	Topic
June 19	Literature Reviews & Grants 101
June 26	Writing a Scientific Manuscript (Part 1)
July 10	Writing a Scientific Manuscript (Part 2)
July 17	Fundamentals of Study Design
July 24	Fundamentals of Biostatistics (Part 1)
July 31	Fundamentals of Biostatistics (Part 2)

To RSVP call (615) 963-2820 or email mva@Meharry-Vanderbilt.org