

Query Tool Application Programming Interface (API)





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QUERY TOOL APPLICATION PROGRAMMING INTERFACE

The Query Tool Application Programming Interface (API), a RESTful API that is connected to a micro service that allows users to make HTTPS requests using GET and POST. Users will be able to query data from different endpoints using Python, JavaScript, R and other tools that use Restful APIs.

OBJECTIVE

This chapter provides information for users on how to:

- ❖ To log in to the Query Tool API
- ❖ Enter parameter information for each endpoint

For information about the Query Tool API Endpoints please access the API Documentation for the BRICS Instance:

BRICS Instance	Query API
NEI	https://brics.nei.nih.gov/gateway/query-api/swagger-ui/index.html
CdRns	https://cdrns.nih.gov/gateway/query-api/swagger-ui/index.html
FITBIR	https://fitbir.nih.gov/gateway/query-api/swagger-ui/index.html
PDBP	https://pdbp.ninds.nih.gov/gateway/query-api/swagger-ui/index.html

Note the Query-API is designed similarly for all BRICs instances: Endpoint names will be identical except for the .gov name of the BRICs Instance (as shown above in bold)

For more information and examples on the endpoints, please refer to the Jupyter Notebook Version of this API Manual and the additional Demo Notebooks.

AUTHENTICATION

AUTHENTICATION

To access the Query Tool API the user needs to provide an authentication 'token' in the header of each API request (Figure 1). This token is found by logging on to the user's BRICS account (FITBIR etc) and going to the 'Account Management' tab (Figure 2). Here you will be able to cut and paste the token and set it as a variable in your program of choice (Jupyter Notebook, R, JavaScript, etc).

**Note: The authentication method for the Query-API changed to the above workflow after RAS (Researcher Auth Service) updates in Nov 2023.*

Figure 1

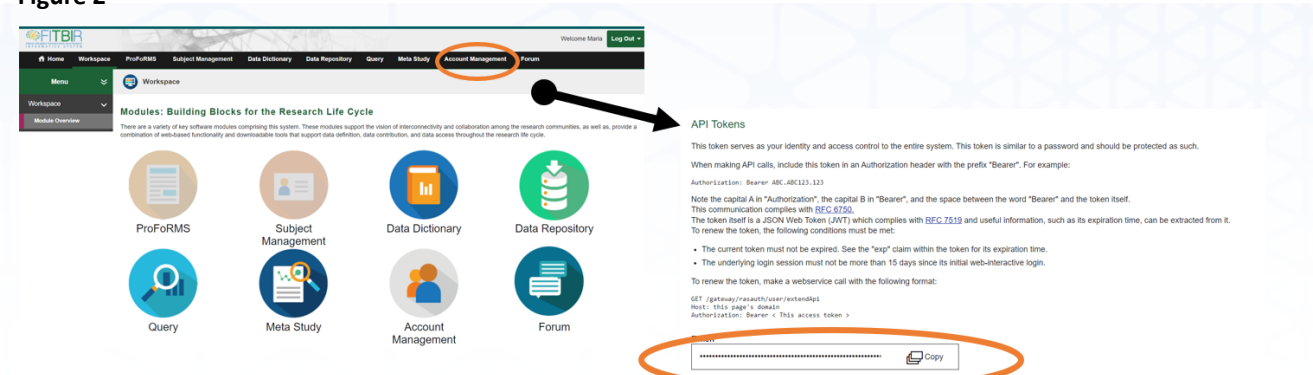
```
# Define API headers and query URL

queryurl = "https://fitbir.nih.gov/gateway/query-api/data/csv"

#Typically Included in Request Header
#Accept - For specifying the type of content that can be accepted in a response. (json etc) See cor
#Content-type - For indicating the type of content that's included in the request body. (json etc)
#Authorization - in the format of 'Bearer ' + token

headers = {
  'accept': 'application/zip', # note this cannot be 'application/csv' as it was in the old exam
  'Content-type': 'application/json',
  'Authorization': 'Bearer ' + token }
|
```

Figure 2



STUDY API

The following endpoints will return the study profile information for a study. As mentioned in the Authentication section, a token is needed to retrieve data for all subsequent endpoints.

There are two endpoints that allow users to the do following:

1. Get study profile information for all studies.
2. Get study profile information for one study using a Study Prefix
3. Get studies that have submitted data to a form structure using the Form Structure Shortname.

Below are the endpoints for retrieving information about studies and examples.

GET ALL STUDY INFORMATION

This service will return all the studies that have data in the instance. Optional it will return information for a study with the study Prefix ID (Study ID) provided. The Study Prefix ID can be retrieved using this endpoint.

The following information is needed

Endpoint URL: <https://fitbir.nih.gov.cit.nih.gov/gateway/query-api/study>

Parameters:

Headers	Response content type: application/json Content-Type: application/json Authorization: Bearer + Token
Data	Optional: prefixedId =
GET Response	<pre>response = requests.get("https://fitbir.nih.gov/gateway/query-api/study", headers=headers)</pre> <pre>response = requests.get("https://bricsnei-stage.cit.nih.gov/gateway/query-api/form/study?prefixedId=STUDYID", headers=headers)</pre>

Figure 1: Example of Input

```
#get study prefix from title
url = "https://" + BRICSInstance + "/gateway/query-api/study"

headers = {
  'accept': 'application/json',
  'Content-type': 'application/json',
  'Authorization': 'Bearer ' + token
}
```

```
query = requests.get(url, headers = headers)
query
```

<Response [200]>

Output

Output Format	JSON
----------------------	------

Output Description

Output Object	Required (Yes/No)
Study Title	Yes
Study ID	Yes
Abstract	Yes
Principal Investigator	Yes

Figure 2: Example of Output

```
output = query.json()
output
```

```
{
  'status': 'Public',
  'id': 'FITBIR-STUDY0000381',
  'title': 'Sensory Integration Balance Deficits in Complex mTBI: Can Early Initiation of Rehabilitation with Wearable Sensor Technology Improve Outcomes?',
  'pi': 'Laurie King',
  'fundingAmount': 4652120.0,
  'abstract': 'Traumatic brain injury (TBI) and post-traumatic headache (PTH) are common conditions that exert substantial impacts in the military and in the civilian population. TBI is a signature injury of U.S. Soldiers during modern warfare with 20% of Operation Enduring Freedom and Operation Iraqi Freedom Veterans having experienced TBI, 75% of which are mild TBI (mTBI). In addition, approximately 1.7 million American civilians seek medical attention each year for TBI and there are 1.6-3.8 million sports-related mTBIs annually. Headache is the most common symptom following mTBI, with estimates of headache prevalence following mTBI as high as 90%. PTH is often persistent (i.e., endures for >3 months following the injury), with about 66% of people with mTBI reporting continued headaches at 3 months post-injury. Although progress has been achieved in understanding PTH epidemiology, there are significant shortcomings in the description of PTH mechanisms, diagnosis, and treatment. A major challenge for the investigation, diagnosis, a
```

GET ALL STUDIES ASSOCIATED WITH A FORM STRUCTURE

Returns all the studies that have data submitted to the form structure

The following is needed

EndpointURL: <https://fitbir.nih.gov/gateway/query-api/study/form?formName=>

Parameters:

Headers	Response content type: application/json Content-Type: application/json Authorization: Bearer + Token
Data	Form Structure Short Name
GET Response	response = requests.get("https://fitbir.nih.gov/gateway/query-api/study/form?formName=Form Structure Shortname", headers=headers)

Figure 1: Example of Input

```
url = "https://" + BRICSInstance + "/gateway/query-api/study/form?formName="
header = {
    'accept': 'application/json',
    'Content-type': 'application/json',
    'Authorization': 'Bearer ' + token
}

formstructureshortname = input()
```

GCS

```
query = requests.get(url + formstructureshortname, headers=header)
query
```

<Response [200]>

Output

Output Format	JSON
----------------------	------

Output Description

Output Object	Required (Yes/No)
Study Title	Yes
Study ID	Yes
Abstract	Yes
Principle Investigator	Yes

Figure 2: Example of output

```
formstructureinformation = query.json()
formstructureinformation
```

```
[{'form': 'GCS',
  'studies': [{'abstract': 'Activity-related concussion is a growing epidemic particularly in collegiate athletes. The cumulative effective of multiple concussions necessitates that return-to-activity testing post-concussion are both appropriate and sensitive in determining the readiness of the individual to return to the field. Postural stability has been shown to be a good indicator of recovery following a concussive episode. The Balance Error Scoring System (BESS) is the most widely used clinical assessment of postural stability with post-concussion athletes, yet it lacks adequate quantitative metrics needed to detect subtle changes in stability. The Virtual Environment Traumatic brain injury (TBI) Screen (VETS) device is a new assessment tool that can potentially be used to measure postural stability in healthy and neurologically impaired individuals. The VETS is a variation of our previously approved (closed) IRB approved protocol (20839) for validation of our Therawii (Portable, Instrumented Postural Stability System). The VETS uses a large wide screen TV to display a virtual reality scene to the subject. Two hundred healthy adults will participate in this study. Subjects will perform standing postural tasks using the VETS, clinical examination and neurocognitive tests. The purpose of this study is to validate the use of the VETS as a measure of postural control for assessing an individual's readiness to return to sport or activity.',
    'status': 'Public',
    'id': 'FITBIR-STUDY0000237',
```

FORM STRUCTURE API

The Form Structure API uses the Study Prefix ID and returns the form structures that have data submitted against in a JSON format. To learn more about retrieving the Study Prefix ID, please refer to the section on the Study API endpoints.

GET FORM STRUCTURES FOR A STUDY

Returns all the form structures that have data submitted for the study.

The following is needed

Endpoint URL: <https://fitbir.nih.gov/gateway/query-api/form/study?prefixedId=>

Parameters:

Headers	Response content type: application/json Content-Type: application/json Authorization: Bearer + Token
Data	STUDY ID
GET Response	response = requests.get("https://fitbir.nih.gov/gateway/query-api/form/study?prefixedId=STUDYID", headers=headers)

Figure 1: Example of Input

```

url = "https://" + BRICSInstance + "/gateway/query-api/form/study?prefixedId="

headers = {
  'accept': 'application/json',
  'Content-type': 'application/json',
  'Authorization': 'Bearer ' + token
}
studyid = input("Enter Study PrefixID ")

Enter Study PrefixID FITBIR-STUDY0000267

query= requests.get(url + studyid, headers = headers)
query

<Response [200]>

```

Output

Output Format	JSON
----------------------	------

Output Description

Output Object	Required (Yes/No)
Study Prefix ID	Yes
Form Structure Short Name	Yes
Form Structure Title	Yes

Figure 2: Example of Output

```

studyformstructuredata = query.json()
studyformstructuredata

[{'studyId': 'FITBIR-STUDY0000267',
  'forms': [{'id': 2314,
    'shortName': 'AIS',
    'title': 'Abbreviated Injury Scale (AIS)',
    'version': '1.0'},
    {'id': 2727,
    'shortName': 'AIS_Appdx_TRACKTBI',
    'title': 'Abbreviated Injury Scale (AIS) Appendix for TRACK-TBI',
    'version': '1.0'},
    {'id': 2575,
    'shortName': 'AUDITC',
    'title': 'Alcohol Use Disorders Identification Test - Consumption Questions (AUDIT-C)',
    'version': '1.2'},
    {'id': 2782,
    'shortName': 'AUDITC_Appdx_TRACKTBI',
    'title': 'Alcohol Use Disorders Identification Test - Consumption Questions (AUDIT-C) Appendix for TRACK-TBI',
    'version': '1.0'},
    {'id': 2641,
    'shortName': 'Adverse_Events_FITBIR',
    'title': 'Adverse Events FITBIR',
    'version': '1.0'}]}]

```

DATA ELEMENTS API

The data element API uses the form structure short name and returns the data elements within that form structure. The output will be in a JSON format and provide information about the data element such as the position in the form structure, the title and variable name.

The information about the data element is useful when filtering data in the Data API.

Below is information and examples for retrieving the data elements for that form structure.

GET DATA ELEMENTS FOR A FORM STRUCTURE

Return all data elements associated with the form structure.

The following is needed

Endpoint URL: <https://fitbir.nih.gov/gateway/query-api/dataElement/form/>

Parameters:

Headers	Content-Type: application/json Authorization: Bearer + Token
Data	Form Structure Short Name
GET Response	response = requests.get("https://fitbir.nih.gov/gateway/query-api/dataElement/form/Form Structure Shortname", headers=headers)

Figure 1: Example of Input

```
url = "https://" + BRICSInstance + "/gateway/query-api/dataElement/form/"

headers = {
#   'accept': 'application/json',
  'Content-type': 'application/json',
  'Authorization': 'Bearer ' + token
}

# print("Input Form Structure Short Name")
formstructureshortname = input()
```

GCS

```
dataelementapiquery = requests.get(url + formstructureshortname, headers = headers)
dataelementapiquery
```

<Response [200]>

Output

Output Format	JSON
----------------------	------

Output Description

Output Object	Required (Yes/No)
Data Element Name	Yes
Form Structure Group Name	Yes
Data Element Title	Yes
Data Element Short Description	Yes
Data Element Data Type	Yes

Figure 2: Example of Output

```
dataelementapiinformation = dataelementapiquery.json()
dataelementapiinformation
```

```
[{'name': 'Main',
  'position': 0,
  'threshold': 1,
  'dataElements': [{'id': 69410,
    'name': 'GUID',
    'title': 'GUID',
    'description': 'Global Unique ID (GUID) which uniquely identifies a subject',
    'dataType': 'GUID',
    'inputRestriction': 'Free-Form Entry',
    'requiredType': 'Required'},
    {'id': 69738,
    'name': 'SubjectIDNum',
    'title': 'Subject identifier number',
    'description': 'An identification number assigned to the participant/subject within a given protocol or a study.',
    'dataType': 'Alphanumeric',
    'inputRestriction': 'Free-Form Entry',
    'requiredType': 'Optional'},
    {'id': 70501,
    'name': 'AgeYrs',
    'description': 'Age in years'}
```

DATA API

The Data API allows users to retrieve data for one or more studies and form structures. Similar to the Query Tool, users are able to (1) Download data for form structures within a study, (2) Join form structures for one or more studies, (3) Filter on data elements with the advance Boolean Search.

Below are the endpoints and examples for retrieving data from studies and form structures.

GET DATA FROM MULTIPLE FORM STRUCTURES WITHOUT DOING JOINS

Returns data for multiple form structures without doing joins. The output is one .csv table per form/study input specified.

The following is needed

Endpoint URL: <https://fitbir.nih.gov/gateway/query-api/data/bulk/form/study>

Parameters:

Headers	Content-Type: application/json Authorization: Bearer + Token
Data	Form Structure Short Name Optional: Study Prefix IDs
GET Response	response = requests.get("https://fitbir.nih.gov/gateway/query-api/data/bulk/form/study, headers=headers,json=data)

Figure 1: Example of Input

```
# set input parameters:
# Input any form structures associated with your BRICs instance of interest (use short name)
form1 = 'GCS'
form2 = 'ImagingDiffusion'

# Input any study study prefix ID
study1 = ['FITBIR-STUDY0000409']
study2 = ['FITBIR-STUDY0000267']

multipleformsheader = {
    'Content-type': 'application/json',
    'Authorization': 'Bearer ' + token
}

multipleformsurl = "https://" + BRICSInstance + "/gateway/query-api/data/bulk/form/study"
```

```
multipleformsfilter = {
  "flattened": "false",
  "formStudies": [
    {
      "form": form1,
      "studies":
        study1
    },
    {
      "form": form1,
      "studies":
        study2
    },
    {
      "form": form2,
      "studies":
        study1
    },
    {
      "form": form2,
      "studies":
        study2
    }
  ]
},
"outputFormat": "csv"
}
```

```
multipleformsquery = requests.post(multipleformsurl,headers = multipleformsheader,json = multipleformsfilter)
multipleformsquery
```

<Response [200]>





Output

Output Format

Output Description

Output Object	Required (Yes/No)
CSV File of Data	Yes

Figure 2: Example of Output

 query_result_GCS_2024-04-10T09-30-46451...	4/10/2024 9:31 AM	Microsoft Excel Com...	436 KB
 query_result_GCS_2024-04-10T09-31-00178...	4/10/2024 9:31 AM	Microsoft Excel Com...	18,771 KB
 query_result_ImagingDiffusion_2024-04-10T...	4/10/2024 9:31 AM	Microsoft Excel Com...	151 KB
 query_result_ImagingDiffusion_2024-04-10T...	4/10/2024 9:31 AM	Microsoft Excel Com...	3,439 KB



Where:

query_result_GCS_2024-04-10T09-30-464513621180269995292

Study ID	Dataset	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main
409	FITBIR-DA TBIHF835GX0					2				2	12.86	Case	CAMRI						
409	FITBIR-DA TBITT216PCF					9				6	1.69	Case	CA						
409	FITBIR-DA TBIGF501TT3					15				2	12.94	Case	CAMRI						
409	FITBIR-DA TBINF550DRZ					8				2	1.69	Case	CAMRI						
409	FITBIR-DA TBIGF501TT3					15				2	12.69	Case	CAMRI						
409	FITBIR-DA TBINC471RT2					12				2	1.7	Case	CAMRI						
409	FITBIR-DA TBIRD354FCX					15				2	1.7	Case	CAMRI						
409	FITBIR-DA TBIGF501TT3					15				2	12.77	Case	CAMRI						
409	FITBIR-DA TBITN052XX8					11				2	1.67	Case	CAMRI						
409	FITBIR-DA TBITP964XWF					0				2	1.67	Case	CAMRI						
409	FITBIR-DA TBITR117HDX					13				2	1.67	Case	CAMRI						
409	FITBIR-DA TBIGF501TT3					15				2	12.52	Case	CAMRI						
409	FITBIR-DA TBIGF501TT3					15				2	12.27	Case	CAMRI						
409	FITBIR-DA TBIGF501TT3					15				2	12.25	Case	CAMRI						

query_result_GCS_2024-04-10T09-30-464513621180269995292

Study ID	Dataset	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main	GCS.Main
267	FITBIR-DA TBIYV665UPY					48				7	2.9375	Case	CAMRI	Other, spe	7537	Other, spe	60667		3
267	FITBIR-DA TBIHA594LX					30				1	2.9375	Case	CA	Other, spe	845	Other, spe	6703		3
267	FITBIR-DA TBICR115JX3					19				4	2.9375	Case	CA	Other, spe	6227	Other, spe	50491		3
267	FITBIR-DA TBIUV782EKM					29				1	2.9375	Case	CA	Other, spe	3278	Other, spe	25441		4
267	FITBIR-DA TBIJV123ZP8					68				2	2.9375	Case	CA	Other, spe	5703	Other, spe	45516		4
267	FITBIR-DA TBIYP435WPR					28				2	2.9375	Case	CA MRI H	Other, spe	7719	Other, spe	62412		4
267	FITBIR-DA TBIGM588BG1					76				3	2.9375	Case	CA	Other, spe	763	Other, spe	5912		4
267	FITBIR-DA TBIMK549LL5					32				7	2.9375	Case	CA	Other, spe	869	Other, spe	7051		3
267	FITBIR-DA TBIKU777LCB					22				1	2.9375	Case	CA	Other, spe	5360	Other, spe	43802		3
267	FITBIR-DA TBIKA183GU8					23				10	2.9375	Case	Cohort2w	Other, spe	7158	Other, spe	57987		3
267	FITBIR-DA TBIRG914MB3					50				12	2.9375	Case	CA	Other, spe	10592	Other, spe	86094		3
267	FITBIR-DA TBINE357TLR					22				1	2.9375	Case	CAMRI	Other, spe	3084	Other, spe	24256		4
267	FITBIR-DA TBI_INVRV722ENT					77				1	2.9375	Case	CA	Other, spe	4951	Other, spe	40325		4
267	FITBIR-DA TBIU7739TVA					30				11	2.9375	Case	CAMRI	Other, spe	1770	Other, spe	14168		4

query_result_ImagingDiffusion_2024-04-10T09-31-03786940054294527485

Study ID	Dataset	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi
409	FITBIR-DA TBILN356BW0					14	2014-05-0	MGH		14	Case	2 week vis	2014-05-0	/ImagingD	DICOM		MRI		/ImagingD2c0
409	FITBIR-DA TBINF550DRZ					8	2014-10-1	MGH		180	Case	6 month v	2014-10-1	/ImagingD	DICOM		MRI		/ImagingD2cf3
409	FITBIR-DA TBI_INVLZ724FGQ					17	2016-03-1	Joseph Applebaum			Case	6 month v	2016-03-1	/ImagingD	DICOM		MRI		/ImagingDa4e
409	FITBIR-DA TBILJ886WMX					13	2016-02-0	MGH		180	Case	6 month v	2016-02-0	/ImagingD	DICOM		MRI		/ImagingD040
409	FITBIR-DA TBIJOSLJMY					12	2015-08-0	MGH		14	Case	2 week vis	2015-08-0	/ImagingD	DICOM		MRI		/ImagingD2f2

query_result_ImagingDiffusion_2024-04-10T09-31-0515687447877164834836

Study ID	Dataset	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi	ImagingDi
267	FITBIR-DA TBIZY358UAZ					43	2015-01-2	VCU		14	Case	2 week vis	2015-01-2	/DTI_Site1	DICOM		MRI		/DTI_Site1e96
267	FITBIR-DA TBIBA600EKZ					22	2015-07-1	VCU		180	Case	6 month v	2015-07-1	/DTI_Site1	DICOM		MRI		/DTI_Site18b7

Note the blank rows for the ImagingDiffusion results correspond to the fact that multiple ImagingDiffusion.Diffusion Derived Data.ImgFiles (FA etc) can exist for a single scan ImagingDiffusion.Image Information.ImgFile

GET DATA WITH FILTER AND JOINS

Returns data with filters and joins data into a single output for up to five form structures. Data can be returned in two formats: text (csv) and JSON. Note that if the study is not specified the output will include/search any study WITH AT LEAST ONE of the queried forms. (In the .csv output, the form data element columns corresponding to any additional forms queried for, but not used by the given study, will be left as NaN) If you want to find/compile data for only those studies sharing a common set of specified forms please see BRICSAPIDemo_FindStudiesUsingTwoOrMoreCommonForms

The following is needed

Endpoint URL: (1) <https://fitbir.nih.gov/gateway/query-api/data/csv>

(2) <https://fitbir.nih.gov/gateway/query-api/data/json>

Parameters:

Headers	Response content type: application/zip or application/json Content-Type: application/json Authorization: Bearer + Token
Data	Filter on data elements, form structure and studyID
GET Response	response = requests.get("https://fitbir.nih.gov/gateway/query-api/data/bulk/form/study, headers=headers,json=data)

Define Filter (input to both CSV and Json)

```

filterForQuery = {
  "formStudy": [
    {
      "form": 'GCS',
      "studies": ['FITBIR-STUDY0000267']
    },
    {
      "form": "DemogrFITBIR",
      "studies": ['FITBIR-STUDY0000267']
    },
  ],
  "filter": [
    {
      "dataElement": "AgeYrs",
      "form": "GCS",
      "repeatableGroup": "Main",
      "operator": "AND",
      "rangeStart": "20",
      "rangeEnd": "50",
      "mode": "inclusive"
    },
    {
      "dataElement": "GenderTyp",
      "form": "DemogrFITBIR",
      "repeatableGroup": "Subject Demographics",
      "value": [
        "Female"
      ]
    }
  ]
}

```




Figure 1: Example of CSV Input

```
queryurl = "https://" + BRICSInstance + "/gateway/query-api/data/csv"

headers = {
  'accept': 'application/zip',
  'Content-type': 'application/json',
  'Authorization': 'Bearer ' + token }
```

```
query = requests.post(queryurl,headers=headers,json=filterForQuery)
query
```

<Response [200]>

Figure 2: Example of JSON Input

```
queryurl = "https://" + BRICSInstance + "/gateway/query-api/data/json"

headers = {
  'accept': 'application/json',
  'Content-type': 'application/json',
  'Authorization': 'Bearer ' + token }
```

```
query = requests.post(queryurl,headers=headers,json=filterForQuery)
query
```

: <Response [200]>

Output CSV

Output Format	Text
----------------------	------

Output Description

Output Object	Required (Yes/No)
CSV Format with Data	Yes

Figure 3: Example of Output

```
pd.set_option('display.max_columns', None)
dataset = query.text
texttodf = StringIO(dataset)
fitbir_data = pd.read_csv(texttodf, sep=";", low_memory=False)
fitbir_data.head()
```

Information from multiple forms is joined into a single table by GUID as in the Web Query Tool

GUID	GCS.Study ID	GCS.Dataset	GCS.Main.GUID	GCS.Main.ASSOCIATED GUID	GCS.Main.SubjectDNNum	GCS.Main.AgeYrs	DemogrFITBIR.Subject Demographics.GenderTyp	DemogrFITBIR.Subject Demographics.SexSubjectGenotypTyp	DemogrFITBIR.Subject Demographics.SexSubjectGenotypOTH	DemogrFITBIR.Subject Demographics.HandPrefTyp	DemogrFITBIR.Subject Demographics.RaceUSACA	
0	TBITW423YBL	267	FITBIR-DATA0011942	TBITW423YBL	NaN	NaN	27	Female	NaN	NaN	Left hand	Black or African-American
1	TBITW423YBL	267	FITBIR-DATA0011942	TBITW423YBL	NaN	NaN	27	Female	NaN	NaN	Left hand	Black or African-American
2	TBITW423YBL	267	FITBIR-DATA0011942	TBITW423YBL	NaN	NaN	27	Female	NaN	NaN	Left hand	Black or African-American
3	TBITW423YBL	267	FITBIR-DATA0011942	TBITW423YBL	NaN	NaN	27	Female	NaN	NaN	Left hand	Black or African-American
4	TBITW423YBL	267	FITBIR-DATA0011942	TBITW423YBL	NaN	NaN	27	Female	NaN	NaN	Left hand	Black or African-American

Note: GCS (Glasgow Coma Scale) information may be collected at more than one time point. Above each row corresponds to one GCS measurement as is distinguished by GCS.Main.DaysSinceBaseline. The above patient has multiple measurements at different time intervals. The demographic information for the subject is joined and repeated for each of these measurement rows.

Output Json

Output Format	JSON
----------------------	------

Output Description

Output Object	Required (Yes/No)
GUID	Yes
Form Structure Shortname	Yes
Study ID	Yes
Dataset ID	Yes
Form Structure Repeatable Group	Yes
Data Elements and Associated Data	Yes

Figure 4: Example of JSON Output of data

```
jsondata = query.json()
jsondata
```

```
[{'guid': 'TBITW423YBL',
  'forms': [{'name': 'GCSV1.2',
    'studyId': 'FITBIR-STUDY0000267',
    'datasetId': 'FITBIR-DATA0011942',
    'repeatableGroups': [{'name': 'Main',
      'data': [[{'GUID': 'TBITW423YBL'},
        {'SubjectIDNum': ''},
        {'AgeYrs': '27'},
        {'VitStatus': ''},
        {'VisitDate': ''},
        {'SiteName': '1'},
        {'DaysSinceBaseline': '0.740277778'},
        {'CaseContrlInd': 'Case'},
        {'GeneralNotesTxt': 'CAMRI'}]]}],
    'name': 'Form Administration',
    'data': [[['ContextType': 'Other, specify',
      'ContextTypeOTH': '2727',
      'DataSource': 'Other, specify',
      'DataSourceOTH': '21588'}]]}],
  'name': 'FITBIR-Data Collection Form - Case'
```